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FLORIDA WILD FLOWERS



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The Saw Palmetto's Fragrant Blossoms
Serenoa serrulata

FLORIDA WILD FLOWERS

*An Introduction to the Flora of the
Florida Peninsula*

BY
MARY FRANCIS BAKER

PHOTOGRAPHS BY
THE AUTHOR

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DEDICATION
TO
THE MEMORY OF
MY MOTHER
SARAH KINNE FRANCIS

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FLORIDA WILD FLOWERS

FLORIDA WILD FLOWERS

INTRODUCTION

A chief delight of the flower-hunter in the Florida peninsula is that on each day of the year something of interest may be found. Nature—the most successful alchemist the world has known—works tirelessly here in winter as in summer, transmuting dull earth and air and water into fragrance and color and beauty.

No other part of our country can show so great a variety in its wild flowers, and in no other state are there so many plants of strange habits and remarkable characteristics. More than three thousand species of flowering plants have already been listed as growing in Florida, and this vast number does not include the many cultivated plants. Northern flowers mingle here with the abundant southern flora, and in the country below Miami is a tropical flora, related botanically to the West Indies rather than to the United States.

In variety of size we have the great magnolia, whose perfumed flowers are larger than one's hand, and we have also the tiny wolffia, smallest of known flowering plants, whose entire growth floating in the water is smaller than the head of a common pin.

The great diversity of soils in Florida, often in a limited area, gives rise to a remarkable variety in the flora. From high pineland to marsh, and from sandy shore to swamp, each change in the character of the soil is shown in the different plant associations. In this diversified country are

low pinelands where delicate Atamasco lilies spring from the forest floor; dry hills where pink thysanella and velvet-leaved blue lupines grow; hammocks where the great magnolia is at home; swamps where cypress knees take fantastic forms, and where crimson spikes of air plants flame from the tree trunks; streams along whose banks white crinums and wild callas bloom; ocean shores where adventurous flowers open on the sands; lake borders curtained with grape and smilax, and marshes "paynted all with variable flowers."

The abundance of the individual plants of a species is a marked characteristic of many Florida wild flowers, and is as striking as their variety. Pink and magenta orchids may be gathered by handfuls; bladderworts bloom in such profusion that the yellow flowers of one species encircle pineland ponds with broad rings of gold; blue iris covers acres upon acres in spring; prairies are whitened by a heliotrope; and with the abundant and attractive milkworts grow myriad pipeworts, whose small flowering-heads are appropriately called immortelles.

From January onward, during an ordinary season, the variety of flowers continually increases. Even dry sands support an interesting flora, and where crumbling limestone ridges break through the scanty covering of earth near our southern shores, plants grow and bloom where it seems impossible such life can exist.

From the Keys and extreme southern Florida, where the mahogany and other trees of the tropics are found, a sub-tropical flora extends northward along the coasts, while such typically northern species as the maple, sumac, Virginia creeper, red mulberry, partridge berry, ash, hickory, willow, and others grow far south in the peninsula, and the star-shaped leaves of the sweet-gum show in Florida the rich autumn coloring that they have in colder states.

Many a Florida marsh, in its changing profusion of flowers, and its varied and ever fresh interest, might rival

the famed gardens of mythology. Typical of many similar locations is a marsh not far from Orlando, where from February to May the beautiful yellow and purple flowers of butterworts sway on slender stems above rosettes of insect-catching leaves. While the butterworts are blooming, orange and yellow thimbles of milkwort appear, and a magenta orchid begins to bloom in the drier places. Before these are through flowering, a fragrant pink orchid opens delicately colored blossoms, and a tall yellow milkwort lifts its flowering-stems above the lower growth. A sedge spreads conspicuous white bracts, like lilies, above the grasses, and in summer a white orchid sends up its spikes by scores. Among lesser plants the sundews spread a multitude of glistening rosettes, and a rose-colored milkwort is abundant. In the borders of this marsh the white crow-poison opens tall racemes of little lilylike flowers in April, and in autumn a trilisa blossoms in royal purple. Beyond the marsh, in open pinelands where green fans of saw palmetto grow in spreading groups beneath the distant trees, white papaw flowers, escaping in midwinter like bottled genii from brown buds that have imprisoned them, grow larger and still larger; blue lupines match the sky in color; a dwarf clematis changes its nodding flowers of dull violet into feathery gray pinwheels, and in summer a handsome relative of rhododendrons and azaleas blooms in white.

Ornamental and useful trees and shrubs that have long been prized in famous gardens of other countries abound in Florida. Our palms, magnolias, bay trees, wild olive, hollies, myrtles, and many others are admirable for ornamental planting. Yet the abundance of cultivated exotics, from all the warmer regions of the world, sometimes diverts attention from the native flora. The botanist André Michaux, who visited Florida late in the eighteenth century, stopping at the "ruins of New Smyrna," and camping by the St. Johns River, as his Journal records, traveled many

difficult miles to find flowers that the tourist today passes by on well-made roads. But Michaux had an advantage the modern traveler sometimes lacks—for he saw the flowers.

A point of especial interest in the Florida flora is the abundance of those plants that have the extraordinary habit of catching and devouring small insects; thereby reversing the usual order, since insects only too commonly devour plants. More than twenty species of insect-catching plants are found in Florida. Our butterworts, sundews, bladderworts, and pitcher-plants are all of them insectivorous, and each of these four groups of plants has its own peculiar way of securing its victims. Brigands and highwaymen of the plant world they are—setting their leaves as traps and spreading them as snares for the unwary, while blossoming alluringly in purple and gold.

But botanizing in Florida is not limited to the ground. Air plants and tree orchids make the swamps and hammocks of southern Florida hanging gardens of beauty. Fastening their strange growth on the trees, and making use of a special diet of atmospheric dust and air and rain, they produce as brilliantly decked spikes of bloom as any of our earth-growing plants. Even on the straight shafts of cabbage palms they grow, one after another up the trunks, as though climbing to the ferns that make their home in the bases of the leaves above, and many a great live oak bears on its spreading branches luxuriant gardens of epiphytes—ferns, air plants, and orchids.

The ferns of Florida are no less remarkable than the flowering plants. Several grow as epiphytes: one of these, the grass fern, resembles a grass in its extremely narrow leaves, which hang like tufts of grass from the tree trunks. Another epiphyte, the resurrection fern, has the strange habit of appearing to wither and die during dry weather, but revives in fresh greenness with each rain. The golden polypody grows most frequently directly below the crowns

of cabbage palms, and winds its brightly colored rootstocks among the bases of the leaf-stalks. A sword-fern, closely allied to the Boston fern, has leaves that are sometimes more than twenty-five feet in length, and the broad leaves of the leather fern, growing in wet soil toward the coast, are often ten feet tall. Resembling both the ferns and the palms in its leaves is the singular zamia, or coontie, that is reminiscent of the peculiar flora of prehistoric ages.

Spring comes to the peninsula before autumn ends. Early spring flowers and belated summer flowers are found together in December, and the cinnamon fern that in northern states sends up its fruiting leaves in spring unrolls them here in autumn. Orchids may be gathered in Florida while snow lies deep on northern fields, the yellow jessamine gives its fragrance to midwinter air, and in the warmer parts of the peninsula the magnificent moon-flower opens, ghostly white, on winter nights.

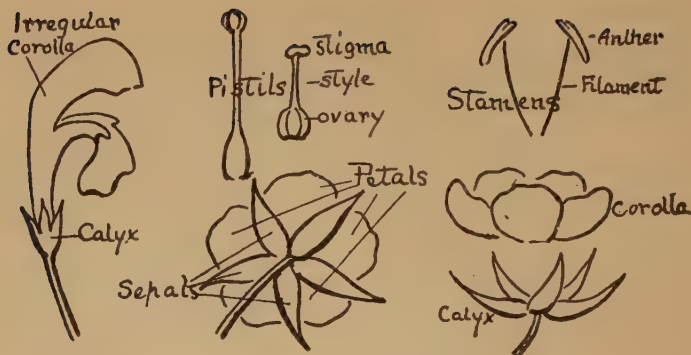


DIAGRAM OF FLOWERS

EXPLANATION

Marvelous in diversity of form, yet linked by underlying similarities, the many plants of the world have long been classified in families, genera, and species, as well as in larger groups. Family characteristics are present in all the genera of a family. Generic characteristics are seen in all the species of a genus, but each species has individual characteristics that separate it from all others.

The chief characteristics of many of the different families are easily learned, e. g., the square stems, irregular corollas, and nutlike fruit in the base of the calyx of the mints, the compact heads of composites, the peculiar flowers of euphorbias, etc. And when the student learns to look for the essential characteristics of a plant new to him, he has gained a knowledge that is the real key to identification.

THE PARTS OF A FLOWER

The different parts of the flower are in concentric circles around the all-important seed-vessel in the center, which has one or more *pistils*.

Surrounding the seed-vessel are the *stamens*, whose more or less threadlike *filaments* are tipped by pollen-bearing *anthers*. In some plants the stamens and pistils are in separate flowers.

Surrounding the stamens is the *corolla* of several or many *petals*, which are separate or are more or less united. In some flowers the corolla is lacking. When the petals or lobes of the corolla are alike in size and shape the flower is *regular*, when some are unlike others the flower is *irregular*.

Surrounding the corolla is the *calyx* of several *sepals*, separate or variously united. In some species both calyx and corolla are lacking.

The seed-vessels show great variety in form. The more common are: the *capsule*, a dry fruit opening by valves or slits; the *legume*, the fruit of the pea family, usually opening along two sides; the *achene*, a small, dry, one-seeded fruit, as in the composites; the *berry*, in which the entire wall of the seed-vessel becomes pulpy; and the *drupe*, in which the outer part of the wall becomes pulpy and the inner part becomes hard and encloses the seed, as in the plums.

ARRANGEMENT OF FLOWERS

Flowers are solitary, or are in *spikes*, *racemes*, or *panicles*, which are terminal, i. e., terminating the branches, or axillary, i. e., borne in the leaf-axils, where the leaf joins the stem. The *spike* is a narrow inflorescence in which the flowers are sessile on the flowering-stem.

In the *raceme* each flower is on a small stalk, the *pedicel*. In the *umbel* the main axis is so contracted that the flower-stalks apparently rise from a common center, as in the carrot family. The *panicle* is a branched inflorescence in which the flowers are stalked.

LEAVES

Leaves are basal, alternate, opposite, or whorled. And are sessile or stalked. They are entire, toothed, lobed, or divided. A compound leaf is one that is formed of two or more leaflets. *Stipules* are small appendages at the base of the leaf-stalk.

KEY

For the Identification of Plants

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FLOWERS RED, REDDISH, OR BROWNISH	10
FLOWERS PINK, ROSE, OR ROSE PURPLE.....	11
FLOWERS BLUE, VIOLET, OR PURPLE	12
FLOWERS YELLOW, YELLOWISH, OR ORANGE.....	13
FLOWERS WHITE OR WHITISH	16
FLOWERS GREENISH	19
CONE-BEARING PLANTS	20
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The chief divisions of the keys are marked by letters:

A indicates the character of the plant.

B indicates the position of the leaves.

C indicates the characteristics of the flowers.

To use this key, one turns to the correct flower color and selects, in alphabetical order, the lettered headings that apply to the plant in hand.

Finding, for example, a plant with herbaceous (not woody) stems, alternate leaves whose margins are toothed, and yellow flowers with five petals, we read the lines marked A, and see that it must belong under HERBACEOUS PLANTS. Below this, reading the lines marked B, we soon find, LEAVES ALTERNATE, TOOTHED OR LOBED, which describes this feature of the plant. Under this are headings marked C; it can go under only one of these, and in this short section each line is read until one is found that applies to the plant and refers to a page where a fuller description will show whether it has been correctly traced.

Abbreviations: lvs. — leaves
 fls. — flowers
 fr. — fruit

FLOWERS, RED, REDDISH, OR BROWNISH

A.	TREES OR SHRUBS	PAGE
	B. LEAVES OPPOSITE OR WHORLED	
	Flowers in terminal panicles, petals 4.....Aesculus	133
	Flowers in terminal clusters, 5-lobed.....Hamelia	215
	Flowers in leaf-axils, minute.....Ceratiola	129
	B. LEAVES ALTERNATE	
	Flowers in leaf-axils, showy, solitary.....Hibiscus	139
	Flowers in leaf-axils, minute, in catkinsMyrica	65
	Flowers in racemes	Leguminosae 104
A.	WOODY VINES	
	Leaves compound	Bignoniaceae 211
	Leaves not compound	Lonicera 218
A.	HERBACEOUS PLANTS	
	B. LEAVES CHIEFLY BASAL	
	Flowers irregular	Orchidaceae 53
	Flowers regular, in spikes. Bracts red, not fls....	
	Tillandsia	39
	Flowers regular, in solitary heads.....Helianthus	232
	B. LEAVES OPPOSITE	
	Flowers irregular, in spikes.....Diapedium	207
	Flowers irregular, in racemes or clusters..Labiatae	193
	Flowers regular, in umbels.....Asclepiadaceae	177
	B. LEAVES ALTERNATE, TOOTHED, LOBED, OR COMPOUND	
	Flowers solitary in leaf-axils.....Modiola	141
	Flowers in racemes	Leguminosae 104
	Flowers in panicles	Gilia 185
	Flowers in heads	Emilia 233
	B. LEAVES ALTERNATE, ENTIRE	
	Flowers solitary, terminal.....Lilium	42
	Flowers solitary, in leaf-axils.....Krameria	102
	Flowers in umbels	Asclepiadaceae 177

FLOWERS, PINK, ROSE, OR ROSE PURPLE (Magenta)

A. TREES, SHRUBS, OR SHRUBBY PLANTS	PAGE
Flowers irregular	Cercis 100
Flowers regular, deeply 5-lobed.....	Malvaceae 138
Flowers regular bell-shaped, fr. a capsule....	Pieris 164
Flowers regular bell-shaped, fr. a berry.....	Vacciniaceae 166
A. HERBACEOUS PLANTS	
B. LEAVES BASAL OR LACKING	
Leaves basal, glandular, petals 5, separate..	Drosera 87
Leaves basal, not glandular, petals 5, united.....	Stenandrium 207
Leaves basal, flowers 6-parted, petals 3..	Orchidaceae 53
Leaves lacking, fugacious, or rootlike....	Utricularia 209
B. LEAVES IN WHORLS OF 4.....	Polygala 124
B. LEAVES OPPOSITE	
C. FLOWERS IRREGULAR	
Flowers 5-lobed, fr. a capsule.....	Gerardia 203
Flowers 2-lipped, fr. 4 nutlets.....	Labiateae 193
C. FLOWERS REGULAR	
Flowers minute, without petals.....	Boerhaavia 76
Flowers with 4 petals.....	Rhexia 153
Flowers with 5 petals, lvs. divided....	Geranium 118
Flowers 5-lobed, lvs. entire.....	Sabbatia 174
B. LEAVES ALTERNATE	
C. FLOWERS IN HEADS	
Leaves compound	Mimosaceae 97
Leaves not compound	Compositae 228
C. FLOWERS NOT IN HEADS	
Flowers Irregular	
Fruit a legume	Leguminosae 104
Fruit an achene	Polygonaceae 69
Fruit a capsule, seeds many.....	Gerardia 203
Fruit a capsule, seeds 2.....	Polygala 125
Flowers Regular	
Petals none, sepals 4, fr. a red berry..	Rivina 75
Petals Separate	
Petals 3	Cuthbertia 36
Petals 4	Gaura 160
Petals 5	Portulaca 78
Petals More or Less United	
Flowers terminal	Phlox 185
Flowers axillary	Convolvulaceae 181

FLOWERS BLUE, VIOLET, OR PURPLE

A. TREES, SHRUBS, OR SHRUBBY PLANTS	PAGE
B. LEAVES OPPOSITE	
Flowers 4-5-lobed, fr. pulpy.....	Verbenaceae 190
Flowers 2-lipped, fr. not pulpy.....	Labiatae 193
B. LEAVES ALTERNATE	
Flowers with 1 petal, in dense racemes....	Amorpha 110
Flowers tubular or strap-shaped, in heads.....	Compositae 228
Flowers 4-5-lobed, not in heads	Solanaceae 186
Flowers with 6 petals (3 large, 3 small)...	Asimina 80
A. HERBACEOUS PLANTS	
B. LEAVES BASAL, CHIEFLY BASAL, OR LACKING	
C. FLOWERS IRREGULAR	
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Leaves basal, fls. solitary, petals united.....	Pinguicula 208
Leaves basal, fls. several or many....	Orchidaceae 53
Leaves chiefly basal, fls. in spikes.	Pontederiaceae 37
Leaves chiefly basal, fls. in panicles.....	Thalia 52
Leaves lacking, fugacious, or rootlike.	Utricularia 209
C. FLOWERS REGULAR	
Flowers with 3 petals.....	Tillandsia 39
Flowers with 5 petals, large, solitary.	Sarracenia 91
Flowers with 5 petals, small, many....	Limonium 168
Flowers 6-parted, lvs. grasslike....	Sisyrinchium 50
Flowers 6-parted, lvs. scalelike, minute.....	Burmanna 53
B. LEAVES OPPOSITE	
C. FLOWERS IN HEADS (which may resemble solitary flowers)	
Flowers tubular or strap-shaped, fr. an achene.	Compositae 228
Flowers 2-lipped, fr. 4 nutlets.....	Labiatae 193
C. FLOWERS NOT IN HEADS	
Flowers More or Less Irregular	
Fruit a capsule, calyx lobes short.....	Scrophulariaceae 199
Fruit a capsule, calyx lobes long, narrow....	Acanthaceae 206
Fruit not a capsule.....	Verbenaceae 190

KEY

13

Flowers Regular	PAGE
Petals none, sepals 4, petal-like.....	Viorna 78
Petals separate, 4-6	Lythrum 154
Petals more or less united	
Flowers few, in terminal cluster.....	Dasystephana 202
Flowers many, in terminal cluster...	Phlox 184
Flowers in umbels	Asclepiadaceae 177
B. LEAVES ALTERNATE	
C. FLOWERS IN HEADS (which may resemble solitary flowers)	
Flowers tubular or strap-shaped....	Compositae 228
Flowers of 5, minute, separate petals.	Eryngium 162
C. FLOWERS NOT IN HEADS	
Flowers More or Less Irregular	
Petals 3 (1 minute)	Commelina 35
Petals 5	Leguminosae 104
Petals united, fls. short-spurred.....	Linaria 200
Petals united, fls. not spurred.....	Lobelia 220
Flowers Regular	
Petals Separate	
Petals 3, sepals green.....	Tradescantia 36
Petals 3, sepals blue or purple....	Iridaceae 49
Petals 4	Cakile 86
Petals 5, fls. large, solitary.....	Passiflora 148
Petals 5, fls. small, in clusters.....	Riedlea 141
Petals More or Less United	
Flowers in terminal clusters.....	Nama 184
Flowers in spikes	Plumbago 167
Flowers in umbels	Asclepiadaceae 177
Flowers axillary, showy	Convolvulaceae 181
Flowers axillary or in racemes, small.....	Campanulaceae 219

FLOWERS YELLOW, YELLOWISH, OR ORANGE

A. TREES, SHRUBS, OR WOODY VINES	PAGE
B. LEAVES OPPOSITE, TOOTHED OR COMPOUND	
Leaves compound	Stenolobium 212
Leaves not compound	Lantana 191
B. LEAVES OPPOSITE, ENTIRE	
C. FLOWERS OF SEPARATE PETALS	
Petals 4, stamens 8.....	Rhizophora 156
Petals 4 or 5, stamens many.....	Hypericaceae 142

C.	FLOWERS OF MORE OR LESS UNITED PETALS	PAGE
	Flowers axillary, conspicuous. Sap milky.....	
	Apocynaceae	176
	Flowers axillary, conspicuous. Sap not milky..	
	Gelsemium	173
	Flowers axillary, small, solitary.....	Ernodea 216
	Flowers small, in 1-sided racemes....	Chiococca 215
	Flowers small, in short racemes.....	Jacquinia 169
	Flowers minute, in panicles.....	Pisonia 76
	Flowers minute, in compact heads..	Compositae 228
B.	LEAVES ALTERNATE, COMPOUND	
	Flowers small, in globose heads.....	Mimosaceae 97
	Flowers not in heads, petals 5, unequal....	Sophora 105
	Flowers not in heads, petals 5, nearly equal.....	
	Guilandina	101
B.	LEAVES ALTERNATE, NOT COMPOUND	
C.	FLOWERS OF SEPARATE PETALS	
	Petals 3	Arecaceae 28
	Petals 4	Onagraceae 158
	Petals 5	Suriana 120
	Petals 6	Annona 81
C.	FLOWERS OF MORE OR LESS UNITED PETALS	
	Flowers 4-lobed. Thorny shrub or tree..	Ximenia 213
	Flowers 4-lobed. Thornless tree	Diospyros 170
	Flowers 5-lobed, stamens many.....	Malvaceae 138
	Flowers 5-lobed, stamens 10	Carica 147
	Flowers 5-lobed, stamens 5	Sideroxylon 170
B.	LEAVES APPARENTLY NONE. Stem jointed, fls. showy	
	Opuntia	151
A.	HERBACEOUS PLANTS	
B.	LEAVES LACKING. Twining vine.....	Cassytha 152
B.	LEAVES FUGACIOUS OR ROOTLIKE. Low plant.....	
	Utricularia	209
B.	LEAVES BASAL	
C.	FLOWERS IN HEADS	
	Leaves grasslike	Xyris 32
	Leaves not grasslike	Compositae 228
C.	FLOWERS NOT IN HEADS	
	Flowers Irregular	
	Flowers solitary	Pinguicula 208
	Flowers many	Orchidaceae 53
	Flowers Regular	
	Flowers solitary, lvs. tubular.....	Sarracenia 89
	Flowers solitary, lvs. broad.....	Nymphaeaceae 83
	Flowers few, in clusters.....	Hypoxis 46
	Flowers many, in raceme.....	Aletris 45
	Flowers many, minute, in spike.....	Orontium 32

B. LEAVES OPPOSITE	PAGE
C. FLOWERS OF SEPARATE PETALS	
Petals 4, stamens 4.....	Ludwigiantha 160
Petals 4 or 5, stamens many.....	Hypericaceae 142
C. FLOWERS OF MORE OR LESS UNITED PETALS	
Flowers in heads.....	Compositae 228
Flowers not in heads.....	Scrophulariaceae 199
B. LEAVES ALTERNATE, COMPOUND	
Flowers irregular, pea-shaped, fr. a legume.....	Leguminosae 104
Flowers nearly regular, fr. a legume.....	Cassiaceae 99
Flowers regular, fr. a capsule. Plant acid....	Oxalis 119
B. LEAVES ALTERNATE, TOOTHED OR LOBED	
C. FLOWERS OF SEPARATE PETALS	
Petals 4, stamens 4 or 8.....	Onagraceae 158
Petals 4, stamens 6.....	Cruciferae 85
Petals 5, stamens many, sap yellow...	Argemone 84
Petals 5, stamens many, sap not yellow.....	Mentzelia 149
Petals 5, stamens 10.....	Triumfetta 137
Petals 5, stamens 5, fls. clustered....	Waltheria 142
Petals 5, stamens 5, fls. not clustered..	Piriqueta 144
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Flowers 5-lobed. Not vines.....	Malvaceae 138
Flowers bell-shaped	Physalis 187
Flowers tubular or strap-shaped, in heads.....	Compositae 228
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C. FLOWERS OF SEPARATE PETALS	
Petals 3, fls. irregular.....	Orchidaceae 53
Petals 3, fls. regular.....	Gyrotheca 51
Petals 4	Onagraceae 158
Petals 5, fls. irregular.....	Leguminosae 104
Petals 5, fls. regular, stamens many.....	Helianthemum 144
Petals 5, fls. regular, stamens 5..	Cathartolinum 118
C. FLOWERS OF MORE OR LESS UNITED PETALS	
Flowers large, few, petals 3.....	Canna 51
Flowers small, many, petals 3.....	Polygala 122
Flowers 5-lobed, in umbels.....	Asclepiadaceae 177
Flowers 5-lobed, in racemes.....	Heliotropium 189
Flowers tubular or strap-shaped, in heads.....	Compositae 228

FLOWERS WHITE OR WHITISH

A. TREES, SHRUBS, OR WOODY VINES	PAGE
B. LEAVES OPPOSITE OR WHORLED	
C. FLOWERS OF SEPARATE PETALS	
Petals 4, stamens 4, lvs. entire.....	Cornus 161
Petals 4, stamens 4, lvs. toothed..	Crossopetalum 132
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CONE-BEARING PLANTS

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NOTE

The plants described in the following pages are arranged in the systematic order of modern botany, and are grouped in families. When several species of a genus are described, generic characteristics are given in the description of the first species, and are not repeated, as, unless otherwise stated, they are the same in the other species.

The flowering season given of plants that grow also in other states applies only to Florida.

Cultivated plants, common in Florida gardens, that are related to the native flora are mentioned, as much knowledge of botany may be gained by close observation of garden plants.

A plant is sometimes known by different botanical names. A number of these synonyms are given in this book.

DESCRIPTION OF PLANTS

CYCAS FAMILY (*Cycadaceae*)

Low plants, with evergreen, palmlike or fernlike leaves.

COONTIE. ZAMIA (Genus *Zamia*)

These lowly representatives of the strange gigantic flora of past ages somewhat resemble the ferns, but, unlike ferns, they bear large, brightly colored seeds; they also resemble the palms, but, unlike them, they have no "flowers" in the more common meaning of that word, and their peculiar cones show a distant relationship to the pines.

The handsome, dark green, leathery leaves, one to three feet long, formed of many narrow, shining leaflets three to five inches in length, are abundant in dry pinelands in the southeastern part of the peninsula, and are in sharp contrast to anything the northern flora offers. The so-called "male" plants bear stamens on the under side of scales, which are arranged in a brown cone. The "female" plants have thicker cones, on whose scales naked seeds are borne. The fertilization of these seeds is remarkable, and when they ripen the brown scales that have protected them are pushed apart, and the scarlet or orange-colored seeds fall in a conspicuous mass.

To Florida Indians these plants, which they called coontie—i.e., flour-root—were of supreme importance, as from the thick underground stems they prepared a superior food-starch that formed a large part of their diet. This is now prepared commercially as Florida arrow-root.

The generic names of the several species found in Florida have been confused, and have been subject to change.

The *zamia* abundant in pinelands in extreme southern Florida, and also found locally elsewhere in the state, *Z. integrifolia*, is characterized by the comparatively few parallel veins in the narrow leaflets. *Z. umbrosa*, found chiefly near the East Coast in the region north and south of Daytona, has slightly broader leaflets with 20 to 30 parallel veins.

The exotic sago palm (which is not a palm but is closely related to the *zamias*) is frequently planted for ornament, and an edible starch is prepared from its stems.

PINE FAMILY (*Pinaceae*)

Gymnosperms, the botanical division to which *Zamia* and cone-bearing trees belong, have naked seeds that are not enclosed in a seed-vessel as are those of the Angiosperms, which now constitute the great majority of seed-bearing plants.

PINES (Genus *Pinus*)

Our chief and most valuable long-leaf pines are *P. palustris*, common through the southern states, and known as southern yellow pine, and *P. caribaea*, the slash pine, a more tropical species, which in many parts of Florida, especially in low ground and in the extreme south, replaces the more widely known yellow pine. *P. palustris* has large cones, 6 to 10 inches long, and leaves 8 to 18 inches long, in clusters of three. The cones of *P. caribaea* are only 4 to 6 inches long, and the leaves, which are both in clusters of two and of three, are from 8 to 12 inches long. Both are handsome and symmetrical in youth, and picturesque in age. Pollen falls abundantly from the trees in late winter, when the new growth is like hundreds of candles among the dark green leaves.

P. clausa, the sand pine, or spruce pine, of the dunes, where it leans inland with outstretched branches, as though fleeing from the winds, has short leaves, two to three inches

long, in clusters of two, and cones only two to three inches long, which often remain on the trees for many years. This pine also grows in dry sand in the interior.

The pond pine, *P. serotina*, found in low grounds, has leaves 6 to 10 inches long, in clusters of three, and cones two inches long.

CYPRESS (Genus *Taxodium*)

Florida species of cypress are deciduous trees of wet soil, and are remarkable for peculiar upright growths of spongy wood, known as knees, which are developed on the roots, and are believed to be of use in aërating them. The great bald cypress, *T. distichum*, has narrow, spreading leaves, about half an inch long. The pond cypress, *T. ascendens*, has smaller leaves, appressed to the branches. The trunks of both are often enlarged at the base and buttressed by stout ridges. The cones, about an inch in diameter, are almost globular.

MONOCOTYLEDONS

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Plants with one seed-leaf. Veins of leaves usually parallel.

WATER-PLANTAIN FAMILY (*Alismaceae*)

Water or marsh plants. Leaves basal. Flowers white, petals 3. Fruit a dense head of achenes.

ARROW-HEAD (Genus *Sagittaria*)

Among the many plants found in the shallow water of lake borders and streams, and blooming in Florida during winter as well as summer, arrow-heads are easily identified

by their white flowers borne in whorls of three around the flowering-stems.

The most showy of our arrow-heads is *S. lancifolia*, a tall aquatic plant, very attractive in bloom, and sometimes listed in florists' catalogues. *S. lorata*, also listed by florists, is grown in aquariums for its extraordinarily long, ribbon-like leaves.

The rootstocks of many arrow-heads are thickened, and those of a species cultivated in China are used as food.

Sagittaria lancifolia. Flowers white, 1-2 in. across, in whorls of 3 around stem 2-6 ft. tall. Petals 3, sepals 3, stamens many. Stamens and pistils in separate flowers on same plant. Leaves basal, oblong or narrow, 8-24 in. long, on erect leaf-stalks. Marshes and shallow water. Blooming all the year. Fla. to Md. and Texas.

Sagittaria graminea. Flowers about $\frac{1}{2}$ in. across. Stem 4-24 in. tall. Leaves narrow. In mud and shallow water. Blooming all the year. Fla. to Texas and northward.

Sagittaria Chapmanii. Similar to *S. graminea*, but flowering-stem is branched. Fla., Ga., and Ala.

Sagittaria lorata. Leaves floating, long, sometimes dilated into a blade at tip. Flowers small. Shallow water. Blooming in spring and summer. Fla. to S. C.

PALM FAMILY (*Arecaceae*)

It is among the grasses and the palms that man has found a large part of his food, many materials for shelter, and a great part of his wealth.

From immemorial days the grasses—wheat, rye, barley, rice, oats, and Indian corn—have fed mankind. The bamboos, which are but grasses of a larger growth, have furnished materials for shelter, food, clothing, and household utensils. But in tropical regions the palms, in their marvelous variety, have been the chief dependence of man, yielding him food, shelter, and clothing, milk, wine, and

sugar, fibers of many kinds, utensils, and weapons. Even raffia and rattan are procured from climbing palms of the tropics, and the importance of the date palm is so great that legend ascribes its origin to the clay left over after the creation of Adam.

Florida has more than a dozen native palms; several grow only in the extreme southern part of the state, and our pinnate-leaved palms are all confined to that region, though the royal palm formerly grew farther north in the peninsula, and the naturalized coconut palm thrives even beyond Palm Beach.

The handsome cabbage palm is a characteristic tree of Florida landscapes, as the low growth of the saw palmetto is a characteristic undergrowth of our pinelands. The cabbage palm, or palmetto, grows not only in Florida, but also along the coastal plain as far as the islands below Cape Hatteras. It adapts itself to the driest and the wettest soils, and anchors itself against the winds by pushing its stout stem down into the earth, a process whose peculiar beginning is easily seen in the roots of young seedlings.

The common name of the saw palmetto is due to the saw-toothed leaf-stalks. The fragrant flowers of this palm, whose thick stems usually creep along the ground, perfume the air, and its fruit was formerly a staple food of Florida Indians.

The needle palm and the bluestem are attractive palms of our swamps, and their leaves were rightly described by earlier writers as "elegant." The leaf-sheaths on the stout trunk of the former are oddly armed with slender spines, like brown knitting-needles, among which the short inflorescence is almost lost.

A rare fan palm of great beauty, *Acoelorrhaphe Wrightii* (*Paurotis*), discovered in the southern part of the peninsula late in the last century, grows in dense clumps of tall, very slender stems. This and other of our native palms

are offered by nurserymen, and are admirable for ornamental planting.

Characteristics of species described. Leaves large, evergreen, orbicular, cleft. Flowers small, petals 3, sepals 3, stamens 6. Fruit a 1-seeded drupe.

Sabal Palmetto. Cabbage palm. Palmetto. Tree 15-70 ft. tall. Flowers whitish, inflorescence large, stout, widely branched. Blooming in summer. Fla. to N. C.

Sabal minor. Bluestem. Dwarf palmetto. Low palm, with stem underground. Leaves glaucous or pale green. Inflorescence slender, branched, longer than leaves. Low grounds. Fla. to S. C., La., and Ark.

Serenoa serrulata. Saw palmetto. Stem usually prostrate, branched. Leaf-stalks spine-toothed. Flowers ivory-white, fragrant, in branched inflorescence 1-3 ft. long. Sandy soil. Blooming in spring and summer. Fla. to N. C. and Texas.

Rhapidophyllum Hystrix. Needle palm. Stem 2-3 ft. tall, armed with long, slender, brown spines. Leaves dark green. Flowers yellow, in dense inflorescence 4-10 in. long. Chiefly in low woods and swamps. Blooming in spring and summer. Fla. to S. C.

ARUM FAMILY (*Araceae*)

Low plants. True flowers minute, on thick spike (spadix) surrounded by a more or less flowerlike envelope (spathe).

SPoonFLOWER. WILD CALLA. ARROW-ARUM (Genus
Peltandra)

The common names of our wild flowers are seldom descriptive, but are an interesting record of folk-lore, of religious fancy and devotion, or of homely household usage which an older generation knew.

Few flowers have such descriptive names as does this, whose inflorescence suggests a long-pointed spoon. Like



FIG. 3. Spoonflower
Peltandra sagittaeifolia

the cultivated calla, which on a smaller scale it resembles, and like the Jack-in-the-pulpit, to which it is also related, the spoonflower crowds its minute blossoms on a fleshy stalk, and surrounds this with a flowerlike protecting envelope, or to borrow the picturesque description of arums from an old Herball; at the top of the stalk "standeth a long hollow Hose or Husk, . . . in the middle whereof standeth a smal long Pestle or Clapper."

The spoonflower is found in wet shaded places, often where the sweet bay blooms on one side, toward the denser swamp, while the open marsh near by is filled with blossoming orchids—fragrant pogonias and bright limodorums.

At two seasons of the year the spoonflower is noticeable; in spring when in bloom, and again in late summer when the globular clusters of blood-red berries are ripe.

The less conspicuous *P. virginica*, with a cylindrical green spathe that is only slightly open, and green fruit, is occasionally found in shallow water.

Peltandra sagittaeifolia. Spoonflower. Flowers callalike, spathe white, 2-4 in. long. Leaves basal, arrow-shaped, 6-8 in. long, on long leaf-stalks. Bogs and swampy places. Blooming in spring. Fla. to Ala. and Va.

Peltandra virginica. Spathe green, 3-8 in. long, margins pale, crisped, closely wrapped around spadix. Wet places. Blooming chiefly in spring and summer. Fla. to La. and northward.

JACK-IN-THE-PULPIT and GREEN DRAGON (Genus *Arisaema*)

The southern Jack-in-the-pulpit, *A. acuminatum*, with green spathe, and three-divided leaves, is found in damp woods. The spathe in this species is wholly green and is prolonged in a slender point, thus differing from the northern *A. triphyllum*, whose green spathe is usually striped with dull purple and white.

The peculiar green dragon, *A. Dracontium* (*Muricauda*),

has a spathe that is prolonged in a slender lash two to eight inches in length, and a large leaf cut into several large leaflets—usually five to eleven. The fruit is a cluster of red berries.

WATER LETTUCE (*Pistia Stratiotes*)

Rosettes of thick, light green, broadly wedge-shaped leaves float on lakes and sluggish streams. This plant, the water lettuce, is related to the spoonflowers and other arums, but is very different in appearance. The leaves, two to five inches long, are strongly ribbed beneath, and from their axils inconspicuous flowers are borne on a small spadix whose whitish spathe is only about half an inch long.

GOLDEN-CLUB (*Orontium aquaticum*)

The golden-club blooms from late winter to summer in swamps and shallow water, bearing a finger-like inflorescence several inches long at the summit of a flowering-stem one to two feet in length. This "golden club" is thickly covered with minute yellow flowers, but the spathe below them is bractlike, and soon falls. The dark green oblong leaves are often more than a foot in length, and have a handsome luster.

YELLOW-EYED GRASS FAMILY (*Xyridaceae*)

Herbaceous plants with grasslike leaves. Flowers small, yellow or white, in short, compact, scaly spike terminating the leafless flowering-stem. Fruit a tiny capsule.

YELLOW-EYED GRASS. HARD-HEAD (Genus *Xyris*)

Plants of this genus are common in low pinelands and marshes, and near lakes and swamps, where the hard, scaly

heads are quickly recognized, even after the flowering season has passed, but correct identification of the many species is not always easy. Of the more readily identified, the small *X. brevifolia* and *X. flabelliformis* begin to bloom in winter. A little later the larger *X. ambigua*, *X. Elliottii*, and others bloom, and in summer and autumn the coarse growth of *X. platylepis* and other species is noticeable.

X. Elliottii grows in tufts of dark, narrow, shining leaves, which are more or less twisted, though less so than the fewer and broader leaves of our only white-flowered species, *X. pallescens*.

The fragile petals of these hard-heads, as they are locally called, are only about one-fourth of an inch long, and seem to escape with difficulty from the grasp of the embracing scales, which serve to protect the unopened flower and the ripening seeds. Although the flowers are small, and few open at one time in a spike, yet the plants often grow in such profusion that low grounds are yellow with them.

Xyris platylepis. Spike about 1 in. long. Stalk 1-3 ft. tall. Petals 3, yellow, sepals 3, stamens 3. Leaves basal, grasslike, 8-24 in. long. Low grounds. Blooming in summer and fall. Fla. to S. C. and Texas.

Xyris Elliottii. Spike smaller than above. Stalk 10-20 in. tall. Leaves many, narrow, twisted, 3-9 in. long. Fla. to S. C. and Ala.

Xyris pallescens. Flowers white. Spike about $\frac{1}{2}$ in. long. Stalk 1-2 ft. tall, 2-edged above, spirally twisted. Blooming in winter and spring. Fla. and Ga.

Xyris brevifolia. Flowers yellow. Spike very small. Stalks 4-12 in. tall. Leaves very narrow, 1-3 in. long. Low pinelands. Blooming in winter and spring. Fla. to N. C.

Xyris flabelliformis. Similar to *X. brevifolia*, but leaves are shorter, slightly broader, and spread in one plane, like a fan. Fla. to Miss.

PIPEWORT FAMILY (*Eriocaulaceae*)

Low plants. Flowers minute, crowded in small white or gray buttonlike head at top of leafless flowering-stem.

PIPEWORT. BUTTONS. EVERLASTING. IMMORTELLES.
(Several genera)

In damp pinelands and in marshes from midwinter to autumn thousands of buttonlike heads of pipeworts sway on fluted stems above basal rosettes of narrow leaves. "Everlastings," the country people call them, for they may be picked and kept indefinitely, with little change in their appearance.

The earliest to bloom, and one of the most widely distributed, the small *Syngonanthus flavidulus*, is very common in low pinelands, where its dense tufts of short blue-green leaves begin to send up slender flowering-stems in midwinter. Marshes are dotted in early spring with the myriad white buttons of a larger species, *Eriocaulon compressum*. Our largest pipewort, *E. decangulare*, is slightly later in blooming, and seldom grows in such profusion as the two preceding species.

The flowering-stems of all are delicately fluted, or ribbed, like miniature temple columns. In *S. flavidulus* the ribs are five in number, in *E. decangulare* the number is ten or more. The minute blossoms of pipeworts, crowded tightly together in a head above an involucre of small bracts, seem more like fringed bracts than like flowers, but they are well worth separating and examining under a magnifying glass. Stamens and pistils are in separate flowers, usually in the same head, and except in the genus *Lachnocaulon*, which lacks petals, each flower has two or three sepals and two or three petals.

***Eriocaulon compressum*.** Flowers white, minute, in dense head about $\frac{1}{2}$ in. across, at top of flowering-stem 1-3 ft. tall.

Leaves basal, grasslike, 2-5. long. Marshes and shallow water. Blooming from winter to late summer. Fla. to N. J. and Texas.

Eriocaulon decangulare. Stouter than above species. Leaves 4-20 in. long. Blooming from spring to fall. Fla. to N. J. and Texas.

Syngonanthus flavidulus. Heads whitish, $\frac{1}{4}$ in. across or less. Flowering-stems slender, 4-12 in. tall. Leaves 1-2 in. long, many, very narrow, webby at base. Low pinelands. Blooming from midwinter to fall. Fla. to Va.

Lachnocaulon minus. Heads gray or brown, very small. Flowering-stems pubescent, 4-ribbed, 2-10 in. tall. Leaves narrow, about 1 in. long. Low grounds. Blooming from spring to fall. Fla. to N. C.

SPIDERWORT FAMILY (*Commelinaceae*)

Herbaceous plants. Leaves alternate. Flowers fragile, of 3 blue, pink, or (rarely) white petals. Fruit a capsule.

DEW-FLOWER. DAY-FLOWER (Genus *Commelina*)

A peculiarity by which this genus is easily identified is that although each flower has three petals one petal is so small that it makes no show at all, and the flowers, therefore, seem always to have lost a petal.

The common dew-flower in many places is the large-flowered *C. angustifolia*, which blooms more or less all the year. In some localities the common species is a small weed, *C. nudiflora*.

So ephemeral are dew-flowers that by ten o'clock on a warm morning the beauty of *C. angustifolia* is lost in a pulpy mass of wilted petals. Insects are attracted to this, and in feeding on it are besmeared with pollen, which, as they crawl about, they carry from one flower to another, and so effect cross-pollination. But, as in many other flowers, self-pollination also is ensured as the stamens

and pistils of these fading flowers become coiled and tangled together.

***Commelina angustifolia*.** Flowers blue, about 1 in. across, in few-flowered axillary clusters, each of which in bud is enclosed in a folded green bract. Petals 3, one very small, sepals 3, stamens 3. Stems leafy, spreading, 6-24 in. long. Leaves narrow, 1-5 in. long. Sandy soil. Blooming chiefly from late winter to fall. Fla. to N. C.

***Commelina nudiflora*.** Flowers blue, seldom $\frac{1}{2}$ in. across. Stems creeping and rooting at the joints. Low grounds and waste places. Blooming all the year. Fla. to N. J., Texas, and Mo.

BLUE SPIDERWORT (Genus *Tradescantia*)

Spiderworts bear their flowers in terminal clusters, and are stouter and more erect in growth than dew-flowers. The three petals are of equal size, and from their number the flowers were known in old English gardens as "trinity." Their French name, *éphémérine*, is especially fitting, as the flowers open for only a few hours in the morning.

Species of wandering Jew, or inch plant, are of this family.

***Tradescantia reflexa*.** Flowers blue, 1 in. across, many, in umbellike terminal clusters. Petals 3, sepals 3, stamens 6. Stems 1-3 ft. tall. Leaves narrow, glaucous, 6-20 in. long. Bracts below flowers reflexed. Damp places. Blooming from late winter to fall. Fla. to Ohio, Minn., and Texas.

***Tradescantia foliosa*.** Flowers similar to above species. Plants 1-2 ft. tall. Leaves not glaucous, crowded at base of stem. Leaf-sheaths often hairy. Chiefly in clay soil. Blooming in spring. Fla.

PINK SPIDERWORT (Genus *Cuthbertia*)

The pink spiderworts of Florida are often found growing in dry pinelands with the dew-flower, but, unlike it, are slender, erect plants, with narrow, light green leaves,

and terminal clusters of pink flowers whose centers are filled with pink-haired stamen filaments.

Cuthbertia graminea. Flowers pink, about $\frac{1}{2}$ in. across, in terminal clusters. Petals 3, sepals 3, stamens 6. Stems 3-9 in. tall, growing in tufts. Leaves narrow, 3-6 in. long. Sandy soil. Blooming from midwinter to fall. Fla. to Md., Texas, and Mo.

Cuthbertia rosea. Taller than *C. graminea*, and not densely tufted. Leaves few, 3-12 in. long, about $\frac{1}{4}$ in. broad. Fla. to N. C.

PICKEREL-WEED FAMILY (*Pontederiaceae*)

Aquatic plants. Flowers blue or light purple, 6-lobed, in spikes.

WATER HYACINTH (Genus *Eichhornia* (*Piaropus*))

The vigor of exotics in a new country is proverbial. The water hyacinth, since its introduction to Florida, has spread so energetically here that newspapers, magazines, and agricultural reports have concerned themselves with it, and money and labor are still spent in the effort to destroy this "million-dollar weed" that obstructs navigation. Many of the streams that flow into the St. Johns River become so covered by the plants that no water is visible, and they appear as smooth green lanes winding down to the river—flows of living green, from which masses of the plants, now and then detached, float away on the slow current.

Acres of water hyacinth in bloom on the water have a beauty that once seen is never forgotten. Although the plants usually grow in water they quickly adapt themselves to muddy shores, and there their leaf-stalks lengthen and lose the inflated, globular form by means of which the plants are buoyed on the water, as by air-filled floats.

Eichhornia crassipes. Flowers light purple, about 1 in. across, 6-parted, upper lobe yellow in center, in spike. Flowering-stem 4-15 in. tall. Leaves roundish, 1-3 in. wide, leaf-stalk inflated. In water or mud. Blooming from spring to fall. Introduced in Fla.

PICKEREL-WEED. WAMPEE (Genus *Pontederia*)

Modestly by lakes and streams grows our native "water hyacinth"—the blue pickerel-weed—a plant that has not pushed itself into the daily papers, nor stopped steam-boats, but that lives decently and in order in its preferred habitat of shallow water. Less showy than its foreign cousin, but with similar flowers, though darker and of smaller size, the pickerel-weed is not so unattractive as its name.

Pontederia cordata. Flowers blue or purple, nearly $\frac{1}{2}$ in. across, 2-lipped, 6-parted, many, in spike, upper lobe has 2 yellow spots. Stem 1-4 ft. tall. Leaves oblong, erect, 3-10 in. long, on long leaf-stalks. Shallow water and swamps. Blooming all the year. Fla. to Texas and northward.

PINEAPPLE FAMILY (*Bromeliaceae*)

Plants growing on trees. Flowers regular, petals 3, sepals 3, stamens 6. Fruit a narrow capsule, seeds on a hairy stalk.

SPANISH MOSS. LONG MOSS. FLORIDA MOSS (Genus
Dendropogon)

Of our air plants none is so common as the Spanish moss, which in many parts of the state drapes and decorates the trees with its abundant growth. A rootless plant, it fastens itself to the bark of trees, and by means of specialized scalelike hairs takes its food from air and rain. It is so singular in appearance that it is astonishing to learn that this is a true flowering plant, allied to the lilies. The small flowers show the six-parted, lilylike

form, and are slightly fragrant at night. Nor is it a parasite, as its habit suggests; our plants of this family use the trees merely as supports, and do not penetrate their tissues. The seeds are equipped with feathery parachutes, which float them in the air and hold them to the bark of trees.

The attractive drive from Daytona to New Smyrna is remarkable not only for the great oaks ¹ along the way, but also for the abundance of this air plant, hanging in festoons from the branches, which are upholstered too, as it were, by colonies of the little resurrection fern, *Polypodium polypodioides*, which apparently dies during dry weather, only to revive in fresh greenness with each rain.

Spanish moss is used commercially as filling for mattresses and cushions; for this purpose the gray outer covering of the stems is destroyed, leaving a black "vegetable hair."

Dendropogon usneoides (Tillandsia). Flowers yellowish green, small, solitary from leaf-axils, petals recurved. Stems long, hanging from trees. Leaves threadlike, gray, scurfy, 1-3 in. long. Blooming from spring to fall. Fla. to Va. and Texas.

AIR PLANTS. WILD PINES (Genus *Tillandsia*)

The clustered leaves of air plants are usually dilated at the base, forming reservoirs that hold water and fallen leaves; this, together with air and atmospheric dust, is their food, yet from such meager fare they produce many leaves and brilliantly decked spikes of bloom.

These strange plants which, like the Spanish moss, fasten themselves on trees, are most abundant in the southern part of the peninsula, where in hammocks and swamps they grow in profusion. In this region they

¹ These magnificent live oaks have been cut down since this was written.

begin to bloom in early spring, but in other parts of the state, where they are less common, they do not blossom until summer. In several species bright red bracts protect the buds, and are far more conspicuous than the narrow flowers.

Those who have traveled on the beautiful Caloosahatchee will remember the many air plants on the trees by that river—the showy *T. fasciculata*, with stout, crimson-bracted spikes; the large, pale green *T. utriculata*, in whose leaf-bases handsome green and gold tree-frogs often stay; and the small *T. tenuifolia*, with dense tufts of narrow reddish or dark green leaves. A common but inconspicuous hardier air plant, *T. recurvata*, grows in small gray tufts, often on the same trees with Spanish moss, and even adventures along telephone wires in many parts of the state.

Brilliant plants of this family are found in South America, and there an extreme example of adaptation is shown by a small bladderwort that lives and blooms in the water held in the leaf-bases of a tropical air plant.

Tree orchids are often found growing with air plants, but are easily distinguished by their irregular flowers, and their different manner of growth, as air plants crowd their leaves in a characteristic manner, much like the cultivated pineapples to which they are related.

Tillandsia fasciculata. Flowers purplish blue, narrow, 1 in. long or more, in spikes on branched stem 10-20 in. long. Bracts red, shining, 1 in. long. Leaves chiefly basal, rigid, tapering, as long as stem. Chiefly in swamps. Blooming in spring and summer. Fla.

Tillandsia utriculata. Large plant. Flowers white or straw-color, bracts green. Stem 1-3 ft. long, branched. Leaves shorter than stem. Hammocks and swamps. Blooming in summer. Fla.

Tillandsia Balbisiana. Slender, spikes solitary or few. Flowers purplish blue, stem and bracts red. Stem 1-2 ft. long. Leaves narrow, twisted above the dilated saccate base,



FIG. 4. Air Plant on Oak
Tillandsia fasciculata

as long as stem, or longer. In and near swamps. Blooming in spring. Fla.

Tillandsia tenuifolia. Flowers blue, few, 1 in. long. Stem 6-12 in. long, unbranched. Leaves many, very narrow, often reddish, 6-12 in. long. Hammocks and swamps. Blooming in summer. Fla. and Ga.

Tillandsia recurvata. Small, gray, scurfy plants. Flowers blue, $\frac{1}{2}$ in. long, few. Stems 2-6 in. long. Not confined to swamps. Blooming in summer. Fla. to Texas.

LILY FAMILY (*Liliaceae*)

Flowers 6-parted or 6-lobed, not differentiated into calyx and corolla. Stamens 6. Fruit a capsule or a berry.

CROW-POISON and SCHOENOCAULON (Genera *Tracyanthus* and *Schoenocaulon*)

The large lily family is divided into a number of tribes. The division to which these plants belong includes several species that contain a narcotic poison, and their bulbous rootstocks are sometimes pounded to a paste and used as the common names—fly-poison, crow-poison, etc.—indicate.

The schoenocaulon's wandlike stems, though not conspicuous, are common in pinelands during late winter and spring. The tiny green flowers, only about one-eighth inch long, are given a purple tinge by the colored filaments of the stamens.

Very different in appearance is the crow-poison, *Tracyanthus*, which merits a more attractive common name. For a few weeks in early spring, in many localities, marshes and low grounds between swamp and pineland are ornamented with its cylindrical white racemes. As the flowers fade they change to pink or purple and remain on their fluted pedicels while buds above them are opening in pure white. The seeds ripen rapidly, and in a month from

the time of blossoming the dry capsules are open at the top, ready to send out the scalelike seeds on every breeze.

Schoenocaulon dubium. Flowers greenish, very small, many, in slender spike. Flowering-stem 1-3 ft. tall. Flowers 6-parted. Leaves basal, grasslike, 6-20 in. long. Pine-lands. Blooming in late winter and spring. Fla. and Ga.

Tracyanthus angustifolius. Flowers white, about $\frac{1}{3}$ in. across, many, in raceme 2-4 in. long terminating stem 2-3 ft. tall. Flowers 6-parted. Leaves chiefly basal, narrow, 6-24 in. long. Low grounds. Blooming in spring. Fla. to N. C.

FALSE GARLIC (Genus *Nothoscordium*)

Though belonging to the onion tribe, this small lily-like plant, which grows from a bulb, lacks the characteristic odor of its relatives. A delicate line of red or purple veins each of the three outer divisions of the flowers, which are found locally in low pinelands.

Nothoscordium bivalve. Flowers white, 6-parted, nearly $\frac{1}{2}$ in. long, in umbel of 3-12 at top of flowering-stem 5-16 in. tall. Leaves basal, narrow, nearly as long as stem. Sandy soil. Blooming in winter and spring. Fla. to Va., Texas, and Neb.

RED LILY (Genus *Lilium*)

Low grounds that in spring held pitcher-plants and orchids show in summer the southern red lily, whose large, solitary flower is held upright and open to the sky. This showy lily is abundant in many places, and, like other plants that in Florida disregard the seasons, its blossoms are occasionally found in winter.

Lilium Catesbaei. Flowers orange red, 3-5 in. long, base yellow, spotted with purple, solitary, erect, 6-parted, terminating leafy stem 1-3 ft. tall. Leaves alternate, narrow, erect, 1-5 in. long. Low grounds. Blooming in summer. Fla. to Ala. and N. C.

SPANISH BAYONET and BEAR GRASS (Genus *Yucca*)

The yucca leaf "hurteth those that unadvisedly passe by it," wrote an English herbalist in describing these stout plants, whose leaves point outward like green bayonets below the flowers.

Yucca blossoms, botanists tell us, have become remarkably specialized for insect visitors, and are dependent on yucca moths for fertile seeds. The moth places her eggs in masses of pollen which she forces into the stigma, and it is by this remarkable pollination that the ovules are fertilized. The larva feeds on a few of the young seeds, eats a hole in the wall of the capsule, lets itself down by a thread to the ground, and goes into the earth. There it forms a cocoon in which the pupa remains until the following year, when the moth emerges at the time yucca flowers open.

The Spanish bayonet, *Y. aloifolia*, common on dunes by the coast, opens great panicles of creamy bloom in spring and early summer. The common yucca of the interior, *Y. filamentosa*, bear grass, or Adam's needle, has no trunk, but sends up a tall flowering-stalk. It is a smaller plant than the Spanish bayonet, with less rigid leaves, which bear on their margins strong curly threads, locally known as Eve's apron-strings.

The strong fibers of yuccas are made into cordage; the roots of some are used as soap, and the black seeds of the Spanish bayonet are strung in necklaces.

Florida species of *Nolina*, a genus belonging to this division of the lily family, are relatively slender, unattractive plants of dry pinelands. Their many leaves are long and narrow, and are somewhat harsh and rigid. The flowering-stem, two to six feet tall, bears a panicle of tiny, white, six-parted flowers, some of which are sterile.

Yucca aloifolia. Flowers white, sometimes tinged with purple, about 2 in. long, 6-parted, drooping, many, in panicle

1-2 ft. long. Capsule nodding. Trunk 2-10 ft. tall. Leaves many, rigid, sharp-pointed, 1-3 ft. long, rather narrow, dilated at base. Sandy soil, chiefly near the coast. Blooming in spring and summer. Fla. to N. C. and La.

Yucca filamentosa. No trunk. Flowering-stem 3-10 ft. tall. Capsule erect. Leaves 1-2 ft. long, with threads on margins. Sandy soil. Blooming in spring and summer. Fla. to N. C. and Miss.

SMILAX. GREENBRIAR. BAMBOO-BRIAR. CATBRIAR.
SQUIRREL-BRIAR. HORSEBRIAR. BULLBRIAR.
(Genus *Smilax*)

Climbing over shrubs on the roadsides, and on tall trees in the swamps, forming impenetrable masses of intertwined prickly stems covered by shining leaves, and bearing clusters of red, green, or black berries, species of smilax are abundant through the state, and are known by many names. As catbriars they scratch, and as squirrel-briars they climb; "bull" and "horse" are terms formerly applied to many plants of stout growth.

Although allied to the lilies, the beauty of smilax is not in its flowers but in its luxuriant growth. The leaf-form is different in the different species, but great variation is found in vines of the same species, and even in the leaves of one vine. In the majority the leaves are widened at the base; those, however, of the evergreen laurel-leaved smilax, *S. laurifolia*, one of our largest species, are narrowed at the base. This smilax, common in swamps, bears conspicuous clusters of berries which do not mature until the second year. The fragrant flowers of *S. Beyrichii* agreeably perfume the air in spring. Unarmed stems of the trailing *S. pumila*, which bears orange-yellow berries, lie on the ground in shaded places.

The flowers of this division of the lily family are dioecious, i.e., the stamens and pistil are in separate flowers, and on different plants; the leaves are netted-

veined, instead of parallel-veined, and a pair of tendrils is borne on the leaf-stalk.

Indians of the southeastern states prepared from the thick rootstocks of smilax a starchy food that they called red coontie. Sarsaparilla of commerce is yielded by the roots of several exotic species of this genus.

Smilax laurifolia. Bamboo briar. Woody vine. Flowers green, about $\frac{1}{4}$ in. long, 6-parted, in umbels from leaf-axils. Stems high-climbing, armed with stout spines. Leaves alternate, thick, shining, oblong or linear, narrowed at base, 2-6 in. long. Fruit a black berry. Swamps and thickets. Blooming from spring to fall. Fla. to N. J., Texas, and Ark.

Smilax Beyrichii. Flowers fragrant. Leaves dilated and lobed at base, variable, 1-4 in. long. Berries black. Dry soil. Blooming in spring and summer. Fla. to N. C. and Ala.

Smilax havanensis. Leaves roundish or oblong, spine-toothed, 1-2 in. long. Dry soil. Blooming in spring. Southern Fla.

Smilax pumila. Stems unarmed, somewhat fuzzy, trailing. Leaves broad, 2-4 in. long. Berries yellow to red, pointed. Dry soil. Blooming in fall. Fla. to S. C. and La.

Smilax glauca. Leaves pale beneath, broad, rounded at base, 2-4 in. long. Berries bluish black. Dry thickets. Blooming in spring. Fla. to Mass. and Texas.

Smilax Walteri. Stems prickly only near base. Leaves oblong or broadest near base, 1-5 in. long. Berries red. Swamps and thickets. Blooming in spring. Fla. to N. J. and La.

COLIC-ROOT. ALUM-ROOT (Genus *Aletris*)

The colic-root's wandlike stems, set with many small tubular yellow flowers, are common in damp pinelands during spring. The yellowish green leaves lie in a rosette at the base of the stem. The flowers, which in the more common *A. lutea* are one-third of an inch long, are granular outside, and differ from our other species of the lily

family as the divisions of the perianth are united to form a six-lobed flower.

The range of a northern species, *A. farinosa*, with white flowers, extends into northern Florida. The genus is intensely bitter.

Aletris lutea. Flowers yellow, tubular, fluted, small, in terminal raceme 3-12 in. long. Flowering-stem 1-3 ft. tall. Leaves basal, broadly linear or narrowly elliptic, 1-8 in. long. Low pinelands. Blooming from late winter to summer. Fla. to La.

Aletris aurea. Similar to above, but flowers are bell-shaped and are slightly smaller. Leaves elliptic or oblong, 1-3 in. long. Fla. to Va. and Texas.

AMARYLLIS FAMILY (*Amaryllidaceae*)

Herbaceous plants, chiefly from bulbs. Flowers 6-parted or 6-lobed. Stamens 6. Distinguished from the lily family by the capsule being permanently enclosed in the base of the flower.

STAR-GRASS (Genus *Hypoxis*)

The bright yellow six-pointed stars of *H. juncea* are common in pinelands, where it is one of the more abundant of the smaller winter-flowering plants. Of course it is not a grass, nor are the yellow-eyed grasses and blue-eyed grasses related to the true grasses, though they all have grasslike leaves.

Hypoxis juncea. Flowers yellow $\frac{1}{2}$ -1 in. across, 6-parted, hairy and green outside, 1-3 on slender flowering-stem 2-10 in. tall. Leaves basal, threadlike, 3-12 in. long. Pinelands. Blooming most abundantly in winter and spring. Fla. to Ga. and Miss.

Hypoxis hirsuta. Flowers similar to above, slightly smaller. Leaves linear, hairy, not threadlike, 4-15 in. long. Dry soil. Fla. to Texas and northward.

ATAMASCO LILY. FAIRY LILY. EASTER LILY (Genus
Atamosco)

In favored localities in low pinelands these flowers spring up by scores in late winter and spring, when the dull and unpromising appearing earth suddenly gives birth to beauty in the ever new miracle of life.

Each bulb sends up a few narrow leaves, and a leafless flowering-stalk tipped with a solitary, upright, lilylike flower that is several times longer than the bulb from which it came. A common belief in the country is that these "Easter lilies," as they are locally called, spring up only where the ground has been burned over: a belief that may be due to the fact that the flowers are more conspicuous against blackened earth than they are among dried grasses.

Bulbs of this genus are often cultivated: fairy lilies they are called, and zephyranthes—favorites of Zephyrus, the west wind.

Atamosco Atamosco (Zephyranthes). Flowers white or tinged with purple, 2-3 in. long, funnel-form, 6-parted, solitary on stalk 6-15 in. tall. Leaves basal, narrow, glossy, about as long as stalk. Low grounds. Blooming in late winter and spring. Fla. to Ala. and Pa.

Atamosco Treatiae. Flowers white, tinged outside with pink, about 3 in. long. Leaves very narrow, thick, not glossy. Low pinelands. Fla.

Atamosco Simpsonii. Flowers pale pink, about 2 in. long. Leaves 10-18 in. long; much longer than stalk. Low pinelands. Fla.

WILD CRINUM. SWAMP LILY (Genus *Crinum*)

This beautiful white crinum of river swamps blooms in spring and summer, but belated flowers are found even in midwinter in the southern part of the state. "Lilies" the flowers are commonly called, as they are lilylike in ap-

pearance, but, unlike the true lilies, each *crinum* flower encloses the young seed-vessel in the base of its tube.

Glimpses of this *crinum*'s rare beauty are had from the car window, but a more satisfactory way of botanizing is to search along the borders of streams, where the fragrant flowers open in purest white, against which are contrasted the red stamen filaments.

***Crinum americanum*.** Flowers white, 6-lobed, lobes 2-4 in. long, spreading from summit of narrow tube of equal length. Flowers 2-4, in umbel on stalk 1-2 ft. tall. Leaves basal, strap-shaped, 1-4 ft. long. River swamps. Blooming from spring to fall. Fla. to Ga. and Texas.

SPIDER LILY. ALLIGATOR LILY (Genus *Hymenocallis*)

Freakish and rare in their beauty, a few of our native plants seem entirely foreign to our flora. Ghostly white the strange spider lilies gleam against dark river banks, or rise among the grasses of Florida sands.

The basal tube of each flower is long and slender, and inside the spreading lobes at its summit the long filaments of the six stamens are for a little distance connected by a gauzy white membrane, like an inner cup. From the spreading border of this cup the white filaments stretch out still farther, giving a most singular appearance to the flower. Several species grow in the state, and a few are listed in florists' catalogues.

***Hymenocallis rotatum*.** Flowers white, 6-lobed, in umbel of 2-6 on stalk 1-2 ft. tall. Lobes narrow, 2-4 in. long, spreading from summit of slender tube of equal length. Filaments connected below by white membrane about 1 in. high. Leaves basal, 1-2 ft. long, less than 1 in. wide. Low grounds and sandy soil. Blooming in spring and summer. Fla. to N. C.

***Hymenocallis caribaea*.** Stalk 6-12-flowered, 2-3 ft. tall. Leaves 2-3 ft. long, 2 in. wide or more. Sandy soil. Blooming in summer. Fla.

Hymenocallis Palmeri. Stalk 1-flowered, 6-10 in. tall. Tube of flower 3-4 in. long, lobes nearly as long. Leaves narrow, 10-20 in. long. Sandy soil. Blooming in spring and summer. Fla.

Hymenocallis humilis. Stalk 1-flowered, 3-6 in. tall. Flowers greenish white, tube about 1 in. long, lobes 2 in. long. Leaves very narrow, 4-6 in. long. Sandy soil. Fla.

IRIS FAMILY (*Iridaceae*)

Flowers 6-parted, blue or purple. Leaves sword-shaped or grasslike. Fruit a capsule.

BLUE FLAG. IRIS. FLEUR-DE-LIS (Genus *Iris*)

Iris flowers are peculiar in form; of their six divisions the three outer are large, and spread or droop, the inner are smaller and more erect, and the three stamens are concealed under the three arched, petal-like divisions of the style.

In opulence undreamed of the blue flag, whose generic name signifies "the rainbow," ornaments acres upon acres in many localities in Florida, and for week after week opens handsome flowers three to six inches across. Low grounds bordering streams and surrounding cypress swamps, where in the rainy season the water may stand several inches deep, are favorite locations of this southern form of *Iris versicolor*, which near the Caloosahatchee River begins to bloom in February, and in the marshes east of New Smyrna is in its glory in March and April. Areas of several square yards in extent are occasionally found where the flowers are white.

Iris versicolor. Flowers blue or purple, variegated toward the center with white, yellow, and green, short-stalked in ter-

minal clusters on leafy stem 1-3 ft. tall. Sepals 3, petal-like, 2-4 in. long. Petals 3, shorter. Leaves slightly glaucous, sword-shaped, 1-3 ft. long, upper leaves shorter. Swamps and low grounds. Blooming in late winter and spring. Fla. to Ark. and northward.

BLUE-EYED GRASS. SATIN FLOWER (Genus *Sisyrinchium*)

Grass-like leaves, flattened, two-edged flowering-stems, and loose terminal clusters of small blue flowers are characteristics by which plants of this genus are easily recognized. Several species that are only slightly different from one another in general appearance are common in grassy places, and correct identification is not always an easy matter.

***Sisyrinchium graminoides*.** Flowers blue, 6-parted, about $\frac{1}{2}$ in. across, in one or more terminal clusters which are enclosed at base by 2 green bracts. Sepals and petals alike, 3 each, stamens 3. Stems flattened, 6-20 in. tall. Growing in loose tufts. Leaves grasslike, usually shorter than stem. Pinelands and meadows. Blooming all the year. Fla. to Texas and northward.

***Sisyrinchium xerophyllum*.** Flowers blue, $\frac{1}{2}$ in. or more across. Leaves thickish, somewhat glaucous, as long as or longer than stem. Plants tufted, with much brown fibre at base. Dry soil. Fla.

NEMASTYLIS (Genus *Nemastylis*)

Less common than the blue-eyed grasses to which it is related, but far more noticeable, the nemastylis has a beautiful bright blue flower on a slender, leafy stem.

***Nemastylis coelestina*.** Flowers blue, 1-2 in. across, usually solitary, on leafy stem 1-2 ft. tall. Petals and sepals similar, 3 each, stamens 3. Leaves narrow, 5-18 in. long. Pinelands and prairies. Blooming from spring to fall. Fla. and Ga. to Texas.

BLOODWORT FAMILY (*Haemodoraceae*)

Flowers small, woolly, dull yellow, 6-parted, many, in terminal inflorescence. Fruit a capsule.

REDROOT (Genus *Gyrotheca*)

Dull clusters of redroot flowers are locally abundant during spring and summer in wet grounds, where the dry stems and seed capsules remain through the winter, and from a little distance suggest the ripened heads of some composite. The root sap is brightly colored, and doubt as to the identity of redroot is easily settled by pulling up a bit of the root and crushing it between the fingers.

An allied plant, *Lophiola americana*, found in low pine-lands from northern Florida to New Jersey, resembles redroot in appearance, as the flowers of both are clustered in a woolly inflorescence. Counting the stamens is a certain way of distinguishing these plants, as redroot flowers have three stamens, and the flowers of *lophiola* have six.

***Gyrotheca tinctoria*.** Flowers dull yellowish green, 6-parted, woolly outside, nearly $\frac{1}{2}$ in. long, densely clustered in flat-topped inflorescence at summit of leafy stem 1-4 ft. tall. Leaves sword-shaped, narrow, shorter than stem. Roots red. Wet places. Blooming in spring and summer. Fla. to Mass.

CANNA FAMILY (*Cannaceae*)

Flowers yellow, showy, very irregular. Fruit a capsule.

CANNA. INDIAN-SHOT (Genus *Canna*)

A flash of pale gold banners from the borders of swamps in spring proclaims the wild canna to be in bloom. The flowers of this ornamental plant, which is closely related

to the cultivated cannas, are very peculiar in their irregularity as the filaments of the stamens are broader and more petal-like than the narrow petals, and one stamen only, and that on its extreme margin, bears an anther with the necessary pollen.

Canna flaccida. Flowers yellow, showy, very irregular, tubular below, 3-4 in. long. Sepals 3, 1 in. long. Petals 3, narrow. Stamen filaments broad, petal-like, spreading. Style petal-like, thickish. Capsule bristly, about 2 in. long. Flowers in raceme terminating leafy stem 2-5 ft. tall. Leaves 9-20 in. long. Swamps, chiefly near the coast. Blooming in spring and summer. Fla. to S. C.

ARROWROOT FAMILY (*Marantaceae*)

Plants of low grounds. Stems reed-like. Leaves large. Flowers purple, irregular, in panicles. Fruit a capsule.

THALIA (Genus *Thalia*)

Large, long-stalked thalia leaves are an ornamental feature of swamp borders in spring, appearing several weeks before the reed-like flowering-stem opens its panicle of many purple blossoms.

There is but one fertile stamen in the peculiarly irregular flowers, and only one-half of the anther bears pollen; the sterile stamens are petal-like, and one is strangely transformed into a broad lip.

The plants are tropical in appearance, and are sometimes cultivated. They belong to the botanical order *Scitamineae*, which includes the banana, canna, and ginger families, whose peculiar flowers may be studied in many Florida gardens, the ginger family being represented by shell-flower, *Alpinia*; butterfly lily, *Hedychium*; cardamon, and other plants.

Thalia dealbata. Flowers purple, very irregular, about $\frac{1}{2}$ in. long, many, in panicle terminating flowering-stem 3-6 ft.

tall. Sepals 3, petals 3. Plants covered with white powder. Leaves long-stalked, blades oblong or broadest near base, 10-20 in. long. Swamps. Blooming in summer and fall. Fla. to S. C., Texas, and Mo.

***Thalia divaricata*.** Plants not white-powdery. Flowering-stem 4-10 ft. tall. Panicle widely branched, hairy at joints. Leaves 1-3 ft. long. Wet places. Blooming in summer and fall. Fla.

BURMANNIA FAMILY (*Burmanniaceae*)

Low, erect, thread-like plants with minute blue or white flowers.

BLUE-THREAD. BURMANNIA (Genus *Burmannia*)

These tiny plants are examples of the delicate growth hidden among the grasses of low grounds. In *B. biflora* a dark blue or purple usually colors the stems, the scale-like leaves, the flowers, and even the tiny three-winged capsules, which in form resemble those of a begonia. Burmannias are allied to orchids, but, unlike orchids, their flowers are regular.

***Burmannia biflora*.** Flowers blue, 6-cleft, minute, solitary or several, terminating stem 2-6 in. tall. Leaves scalelike. Low grounds. Blooming chiefly in fall and winter. Fla. to Va. and La.

***Burmannia capitata*.** Flowers greenish white or lavender, minute, in cluster terminating stem 2-8 in. tall. Low grounds. Blooming summer to winter. Fla. to N. C. and La.

ORCHID FAMILY (*Orchidaceae*)

Flowers very irregular. Sepals 3, usually petal-like, petals 3, one petal, the lip, unlike the others. Stamen one, united in a column with the style. Fruit a capsule. Seeds dust-like.

KEY TO THE ORCHID FAMILY

ORCHIDS GROWING ON TREES	PAGE
LEAVES PRESENT	
Flowers white and rose	Ionopsis 56
Flowers greenish, brownish, or white, terminal.....	Epidendrum 56
Flowers greenish or purplish, axillary.....	Vanilla 63
Flowers yellowish, spotted, pseudobulbs long.....	Cyrtopodium 56
Flowers yellowish, spotted, pseudobulbs short	Oncidium 57
LEAVES APPARENTLY LACKING	
Flowers large, solitary or few	Polyrrhiza 55
Flowers minute	Harrisella 55
ORCHIDS GROWING IN EARTH	
FLOWERS YELLOW	
Lip fringed	Blephariglottis 59
Lip not fringed	Stenorhynchus 62
FLOWERS WHITE	
Lip fringed	Blephariglottis 59
Lip 3-parted, not fringed	Habenaria 59
Lip not fringed nor parted, spike spiral	Ibidium 61
Lip not fringed nor parted, spike not spiral	Gymnadeniopsis 60
FLOWERS PINK, MAGENTA, OR PURPLE	
Flowers 1-3, lvs. oblong or elliptic.....	Pogonia 58
Flowers several or many, lvs. 1 or 2, narrow.....	Limodorum 57
Flowers many, lvs. usually 3, 1-3 in. wide.....	Bletia 58
FLOWERS GREENISH, BROWNISH, OR REDDISH	
Leaves Many, Stems Leafy	
Lip 3-parted	Habenaria 59
Lip not parted	Habenella 60
Leaves Few, Chiefly Basal	
Lip 3-lobed	Triorchos 58
Lip not lobed, fls. showy	Stenorhynchus 62
Lip not lobed, concave, fls. small	Ponthieva 62
Lip not lobed, roundish, fls. minute	Malaxis 62
Leaves Lacking	Corallorhiza 62

The very word orchid calls up suggestions of grace and of grotesqueness, of strange beauty and of uncanny mimicry. More than any other family of flowering plants the orchids seem to have taken life into their own control, and to have developed inexplicably along lines of their own. In extravagant variety of flower-form they rival

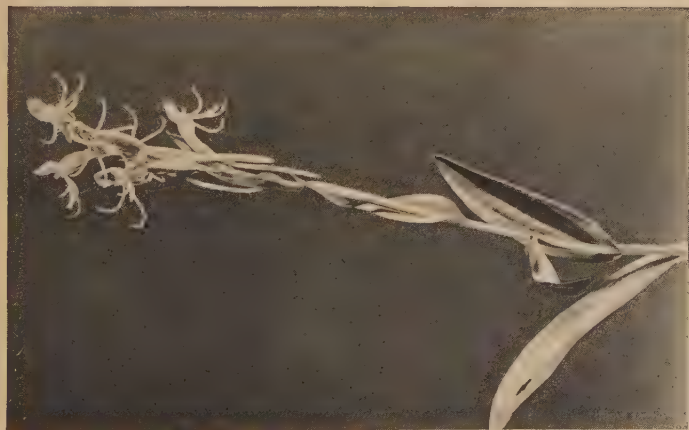


FIG. 5. Spider Orchid
Habenaria quinqueseta



FIG. 6. Orchid
Stenorhynchus orchioides

all others; their adaptations for cross-pollination are many and marvelous, and the flowers of some orchids remain open for more than two months. They clothe themselves in the duller of colors, or open in rare and brilliant beauty, and in odor they range from the abattoir to the Elysian fields.

Of the more than seven thousand orchids that have already been found in different parts of the world, more than half grow upon trees, fastening themselves securely to the trunk or branches, sending out strange aerial roots to lay hold of food from air and dew, and living in a way peculiar to themselves.

ORCHIDS GROWING ON TREES

The majority of the epiphytic orchids of Florida are found only in the southern part of the peninsula. Of this group a butterfly orchid, *Epidendrum tampense*, one of the most abundant, is sometimes sold by florists, and may be grown on dooryard trees. The flowers, which remain open many days, are a peculiar shade of brownish green, with a white and rose purple lip, and take on a reddish tinge with age. This orchid is found locally as far north as New Smyrna and Orlando. A far more showy, but less common, tree orchid of extreme southern Florida, *Cyrtopodium punctatum*, has a flowering-stem several feet long, with many greenish yellow flowers spotted with purplish brown, as are also the conspicuous wavy-margined bracts. In contrast to this large plant is the smallest of our tree orchids, *Harrisella Amesiana*, which consists chiefly of slender roots that stretch along the branches of cypress and a few other trees in the southern part of the state. From the central point of these roots a tiny flowering-stem rises in summer and bears a few minute yellowish green flowers.

Of the rarer tree orchids of extreme southern Florida *Polyrrhiza Lindenii* sends out a short, leafless stem from

a dense cluster of roots, and opens a wonderful white flower whose lip is extended in two narrow segments, and whose slender spur is nearly half a foot in length. *Ionopsis utricularioides*, which is reported by Mr. W. M. Buswell as growing on citrus trees, bears a panicle of small white to rose-colored flowers, veined with deeper color on the broad lip, and resembling somewhat the blossoms of bladderworts. The thick, linear leaves are two to six inches long.

In several of our epiphytic orchids the base of the plant is swollen and forms a pseudobulb, which is thought to serve as a reservoir of moisture. The aerial roots of many are provided with a corky white covering which absorbs moisture from the air, and also serves to protect the active cells in the interior.

Epidendrum tampense. Butterfly orchid. Pseudobulbs roundish, clustered. Flowers greenish brown, about 1 in. across, in raceme or panicle, lip white, variously marked with rose purple. Flowering-stem 6-24 in. long. Leaves thick, linear, 3-10 in. long. On trees in hammocks and swamps. Blooming in spring and summer. Southern Fla.

Epidendrum nocturnum. Without pseudobulbs. Flowers greenish, with white, 3-cleft lip, few, 2 in. or more long, middle lobe of lip long and narrow. Flowering-stem 1-2 ft. long. Leaves oblong or linear, 3-7 in. long. On trees in hammocks and swamps. Blooming in summer. Southern peninsula Fla.

Epidendrum conopseum. Small epiphyte without pseudobulbs. Flowering stem 2-8 in. long. Flowers greenish or whitish, often tinged with purple, less than $\frac{1}{2}$ in. long. Leaves oblong, 1-3 in. long. On trees in damp locations. Blooming in summer. Fla. to S. C. and Ala.

Cyrtopodium punctatum. Pseudobulbs elongated. Leaves linear, ribbed, 1-2 ft. long. Flowers 1-2 in. across, greenish yellow spotted with purplish brown, many, in large panicle. Flowering-stem 2-5 ft. long. Bracts 2-5 in. long, spotted. Lip narrowed in claw at base, 3-lobed above, about 1 in. wide, lateral lobes larger than middle lobe. On trees in hammocks. Southern peninsula Fla.

Oncidium guttatum. Pseudobulbs short. Leaves thick, oblong or elliptic, 1-2 ft. long. Flowers 1 in. or more across, in panicle, yellowish spotted with darker color. Flowering-stem 3-6 ft. long. Lip crested, 3-lobed, about 1 in. wide, middle lobe larger than lateral lobes. On trees in hammocks. Southern peninsula Fla.

TERRESTRIAL ORCHIDS

GRASS-PINK. CALOPOGON. EARRINGS (Genus *Limodorum* (*Calopogon*))

Far more of the Florida orchids grow in the earth than on trees, and the most common are among the most attractive. In many places the grace of the different grass-pinks is offered in profusion from February to July, as in magenta and pink, or in white tinged with purple, they bloom in low pinelands, prairies, and marshes. The broad lip, crested with colored hairs and borne at the upper side of the flower, is a characteristic feature of these orchids. The pollen is concealed under a little lid. The flowering-stem rises from a bulb, or corm, and there is generally but one leaf.

Limodorum graminifolium is the earliest species to bloom, and has fewer and lighter colored flowers than *L. multiflorum*. Both are common in many parts of the state, and are locally called "earrings" by Florida children. *L. Simpsonii*, with larger flowers, and a longer season of bloom, is found in marshes and low prairies in the southern part of the peninsula. The northern *L. tuberosum* shows in Florida a larger growth and more numerous flowers than it does in the North.

Limodorum multiflorum. Flowers purple or magenta, about $\frac{3}{4}$ in. across, several or many in terminal spike. Lip broad, bearded. Stem 6-16 in. tall. Leaves solitary or 2, narrow, 3-6 in. long. Pinelands. Blooming in winter and spring. Fla.

Limodorum graminifolium. Flowers about 1 in. wide, lighter purple than above species. Stem 6-16 in. tall. Leaf 4-8 in. long. Pinelands. Blooming in winter and spring. Fla. to N. C.

Limodorum tuberosum (Calopogon pulchellus). Flowers magenta or pinkish purple, 1 in. or more across. Stem 1-3 ft. tall, 4-15-flowered. Leaf 4-24 in. long, $\frac{1}{2}$ -1 in. wide. Low grounds. Blooming in spring and summer. Fla. to Mo., Newfoundland, and Minn.

Limodorum Simpsonii. Flowers purple, sometimes white, 1-2 in. across. Stem 1-3 ft. tall. Leaf very narrow, 8-15 in. long. Low grounds. Blooming in spring and summer. Southern Fla.

Bletia purpurea. The purple bletia, an orchid of southern Florida pinelands and swamps, has a bulb-like root from the *side* of which the flowering-stem rises. This is one to four feet tall, and bears many purple flowers, about an inch across, with oblong sepals, broader petals, and a 3-lobed, crested lip. The several leaves are one to two feet long, and one to three inches wide.

Triorchos ecristatus. This tall orchid of pinelands, whose narrow leaves, one to two feet long, resemble the leaves of young palmettos, blooms in late summer. The wand-like flowering stem, which rises from the *side* of the bulb-like root, is two to five feet tall, and bears several flowers. The sepals and two of the petals are green or yellowish green, and are less than half an inch in length. The small, broad, 3-lobed lip is brown. It is found in the Florida peninsula.

ROSE POGONIA. SNAKE-MOUTH (Genus *Pogonia*)

The pogonia, like the limodorum, has a bearded lip, but in this case the lip is narrow, and is on the lower side of the flower, which does not open so widely as the flowers of limodorums.

This orchid is often very abundant in open marshes during late winter and spring, and to its beauty adds a fragrance that tantalizes with a suggestion of many perfumes. It is found in northern states also, but in Florida it takes on a more luxuriant growth, and frequently bears

two, and occasionally three flowers on a stalk, where the northern plant usually bears but one.

Pogonia ophioglossoides. Flowers pink or rose, nearly 1 in. long, 1-3 near summit of stem. Lip crested and short-fringed. Stem 6-20 in. tall, bearing 1 or 2 oblong or elliptic leaves 1-3 in. long. Marshes. Blooming in late winter and spring. Fla. to Newfoundland, Ontario, and Kan.

FRINGED ORCHIDS (Genus *Blephariglottis*)

The flowers of this group of orchids are distinguished by the fringed lip, which, like that of the orchids in the two groups following, is prolonged below in a spur.

The beautiful yellow fringed orchid, *B. ciliaris*, is a striking plant when its conspicuous spikes of orange-yellow flowers flame in midsummer marshes.

Blephariglottis ciliaris (Habenaria). Yellow fringed orchid. Flaming orchid. Orange orchid. Flowers orange-yellow, about $\frac{1}{2}$ in. long, many, in cylindrical spike terminating leafy stem 1-3 ft. tall. Lip deeply fringed. Spur 1 in. long or more. Leaves 3-8 in. long. Low grounds. Blooming in summer. Fla. to Texas and northward.

Blephariglottis conspicua. White fringed orchid. Flowers white. Spur nearly 2 in. long. Marshes. Blooming in summer. Fla.

SPIDER ORCHIDS. REIN-ORCHIDS (Genus *Habenaria*)

Allied to the fringed orchids are the spider orchids, whose flowers, as the illustration of *H. quinqueseta* shows, have a form peculiar to themselves. The lip, instead of being fringed as in the preceding group, is three-parted, and the two lateral petals are each unequally two-parted, one of the divisions being narrow and spreading, while the other, short, broad, and erect, is arched under the hooded upper sepal—an arrangement that gives the flowers a marked resemblance to the small white or green spiders sometimes seen on flowers. The blossoms of a number of

orchids become fragrant at night, and those of *H. quinqueseta* sometimes have the odor of cyclamens.

Habenaria quinqueseta. Flowers white, about $\frac{3}{4}$ in. across, in spike terminating leafy stem 8-20 in. tall. Lateral petals divided, lobes curved, apparently unconnected. Spur about 2 in. long. Leaves 2-5 in. long. Pinelands. Blooming in summer and fall. Fla. to S. C. and La.

Habenaria repens. Flowers greenish, many, small, spur short. Stem leafy, 6-24 in. tall. Leaves 2-9 in. long. Wet grounds. Blooming from spring to fall. Fla. to La.

Habenaria Habenaria. Flowers whitish, about 1 in. across, spur 4-5 in. long. Spike few-flowered. Stem 1-2 ft. tall. Leaves 2-6 in. long. Sandy soil. Blooming in summer and fall. Southern Fla.

Habenaria distans. Flowers whitish, small, few, spur short. Stem 8-12 in. tall. Leaves chiefly basal, oblong or elliptic, 2-6 in. long, upper leaves scale-like. Low pinelands. Fla.

SPURRED ORCHIDS (Genera *Gymnadeniopsis* and *Habenella*)

Whitest of summer flowers is *G. nivea*, whose many-flowered cylindrical spikes bloom in profusion in marshy places. Orchids of this group are spurred, like the fringed orchids and the spider orchids, but differ from them in the lip, which is neither fringed nor parted.

The green spurred orchid, *H. Garberi*, which blooms in autumn and winter in shaded places in the southern part of the peninsula, is variable in size and in leaf-form. It is ordinarily one to two feet in height, but a plant that I found one January, not far from Alva, was four feet tall, and had 115 flowers in the long spike. The blossoms of this orchid have a peculiar and agreeable fragrance that is especially noticeable at night.

Gymnadeniopsis nivea (Habenaria). Flowers white, small, many, in cylindrical spike terminating leafy stem 4-20 in. tall. Lip narrow, spur about $\frac{1}{2}$ in. long. Leaves narrow, 2-8

in. long, passing into bracts above. Low grounds. Blooming in spring and summer. Fla. to Texas, Ontario, and Mich.

Habenella Garberi. Flowers yellowish green, nearly $\frac{1}{2}$ in. across, in spike terminating leafy stem 1-4 ft. tall. Lip narrow, spur nearly 1 in. long. Leaves 2-8 in. long. Woods and ditches. Blooming in fall and winter. Fla. peninsula.

LADIES' TRESSES (Genus *Ibidium* (*Spiranthes*))

These small orchids of grassy places are easily identified by the narrow, more or less twisted spike of small white or greenish flowers, which terminates the stem. The upper sepal is united to the oblong upper petals; the small lip is somewhat crisped or wavy, and has within, near the base, two tiny protuberances called callosities. The roots are fleshy, and in some species are tuberous.

The genus is large, and the species are variable. Several are common in Florida. Our largest species is the fragrant *I. cernuum*, often found blooming in wet places in winter, and variable both in size and fragrance.

***Ibidium cernuum*.** Flowers white, nearly $\frac{1}{2}$ in. long. Stem 8-36 in. tall. Leaves narrow, 4-12 in. long. Low grounds. Blooming chiefly in winter and spring. Fla. to Texas and northward.

***Ibidium praecox*.** Flowers white, very small. Spike 1-sided. Stem 6-30 in. tall. Lower leaves narrow, 3-12 in. long. Grassy places. Blooming from winter to summer. Fla. to N. Y. and Texas.

***Ibidium gracile*.** Flowers similar to above species, but lower leaves are short and broad, 1-2 in. long, and soon wither. Pinelands and dry grassy places. Blooming nearly all the year. Fla. to Texas and northward.

STENORHYNCHUS (Genus *Stenorhynchus*)

Plants of this striking orchid are colored throughout, the color varying in different localities from green or pale

yellow to dull red, and in the more deeply colored plants the color varies in each flower from brownish red at the base to terra cotta and pale pink in the lip.

An interesting cross-pollination method of this family is easily observed in the flowers of this orchid. A pencil point or slender straw pushed into an open flower and withdrawn will show stalked pollen masses glued tightly to it, unless, of course, some insect has already visited the flower and been forced to carry them away fastened to its head, and in such a position that they will be pushed against the stigma of the next flower visited.

Stenorhynchus orchioides. Flowers pale green, yellow, or reddish, about 1 in. long, short-spurred, in stout, cylindrical spike terminating stem 1-2 ft. tall. Stem colored like the flowers, glandular. Basal leaves broad, 3-8 in. long, appearing after the flowers and remaining until winter. Stem leaves short, sheathing. Pinelands and hammocks. Blooming in spring and summer. Fla.

Ponthieva racemosa. This small orchid is locally abundant in woods. The oblong or oval lustrous leaves, usually from one to four inches long, are near the base of the stem, which is 6-20 inches tall and terminates in a glandular-pubescent raceme of many small whitish flowers, veined with green, and about one-fourth of an inch across. The lip is concave. It blooms from fall to spring, and is found in the southern states.

Malaxis floridana. Stem angled, 4-12 in. tall. Leaves 2, oval or broadest near base, shining, 1-3 in. long, sheathing base of stem. Flowers greenish, minute, many, in raceme. Petals filiform, reflexed, twisted, lip roundish, dull orange near center. Damp woods. Blooming in summer and fall. Fla.

CORAL-ROOT (Genus *Corallorhiza*)

The peculiar little orchids of this genus are colored throughout, and are usually purplish brown in flowers, stem, and scale-like leaves. Their name refers to the coral-

like rootstocks. *C. Wisteriana*, found in woods in Florida and northward, and blooming here in winter and spring, has flowers nearly one-half inch long in a loosely-flowered raceme terminating a stem 8-16 inches tall. The lip is whitish, spotted with magenta.

VANILLA ORCHID (Genus *Vanilla*)

In hammocks in the extreme southern part of the Florida peninsula a vanilla orchid is occasionally found, *V. Eggersii*, a vine whose thick stems climb by means of aerial roots. The leaves are narrow and scale-like, and in their axils are borne clusters of large, greenish flowers with a white, or purple, or brownish lip. *V. planifolia*, whose long capsules furnish the vanilla used in flavoring, is sometimes planted in Florida gardens. It has thick leaves, two to seven inches long, and clusters of large, pale greenish flowers.

DICOTYLEDONS

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Plants with two seed-leaves. Veins of leaves usually netted.

LIZARD'S-TAIL FAMILY (*Saururaceae*)

Herbaceous plants. Flowers white, minute, many, in spike which droops at tip. Leaves alternate.

LIZARD'S-TAIL (Genus *Saururus*)

The plants are easily identified by their finger-like, white spikes, which droop at the tip. They are found most often in swampy places, frequently growing in great abundance, but they occasionally border damp waysides, where they show a lower and more compact growth. When

the flowers are examined it is seen that they have neither calyx nor corolla, but depend for their small display on the whiteness of the stamens and the flowering-axis. The bruised leaves have a characteristic odor that is suggestive of hamamelis extract.

When the botanist André Michaux searched our country for rare plants late in the eighteenth century, he recorded in his Journal that the roots of lizard's-tail, boiled or pounded, were used in the southern states as a remedy for inflamed wounds and sores.

By the St. Johns River the lizard's-tail seldom blooms before April, but as far south as Ft. Myers the flowers are found during winter.

Saururus cernuus. Flowers minute, white, many, in spike 4-8 in. long, drooping at tip. Calyx and corolla lacking. Stamens 6 or 7. Plants 1-4 ft. tall. Leaves alternate, stalked, blades 3-6 in. long, rather broad, heart-shaped at base. Swamps and marshes. Blooming chiefly in spring and summer. Fla. to Texas, north to Conn. and Minn.

PEPPER FAMILY (*Piperaceae*)

Low plants, with narrow, stiff spikes of minute flowers.

PEPEROMIA (Genus *Peperomia*)

These odd plants, found on old shell-mounds near the coast and in hammocks of southern Florida where they sometimes grow as epiphytes on the trees, attract attention by their peculiar appearance. Low and creeping in growth, with broad leaves, they bloom in extremely narrow spikes of minute flowers that lack both calyx and corolla—each flower consisting merely of two tiny stamens and a pistil, and these so small that even with an ordinary magnifying glass it is difficult to see them distinctly. The fruit is a tiny one-seeded berry. The only allied plant in the United States is the lizard's-tail of the preceding family.

The genus includes hundreds of species, of which the greater number are found in the western hemisphere from Florida to Chili and Argentina. A few are cultivated as greenhouse plants, and some are eaten as salads.

Five species have been discovered in Florida, but they are plants that are only locally abundant. Of these *P. obtusifolia* has smooth, thick, 5-9-nerved leaves, two to four inches long, and densely flowered spikes. *P. leptostachya* is abundant on shell-mounds south of Daytona, where it blooms in winter in thin, greenish spikes, one to four inches long, and in some places covers the ground. The oval or sometimes roundish three-nerved leaves are not thick.

The fruit of a climbing tropical plant of this family is the source of our common pepper, the unripe fruit yielding black, and the ripe fruit white pepper.

BAYBERRY FAMILY (*Myricaceae*)

Shrubs or trees. Leaves alternate, fragrant. Flowers minute, in small catkins. Fruit a small, waxy-coated drupe.

WAX MYRTLE. BAYBERRY (Genus *Myrica* (*Morella*))

Two species of fragrant, evergreen wax myrtles are abundant in Florida. The dwarf *M. pumila*, usually only one to two feet in height, spreads by woody underground stems in sandy soil. The leathery leaves are narrowed at the base, and are usually broadened upward and toothed toward the apex, but they are variable in form, and are sometimes nearly linear. The young branches are hairy.

The large wax myrtle, *M. cerifera*, a very attractive shrub or small tree with pale gray bark, grows chiefly in damp ground near lakes and swamps, but is found also in dry places. It is locally known as sweet bay. The fragrant, narrow leaves, one to four inches long, are broadened

upward, and are toothed toward the apex. Like those of the dwarf species, they are minutely dotted with yellow resin, and have a slight brownish tinge.

The tiny blossoms, which lack calyx and corolla, are borne in late winter in short green or reddish catkins from the axils of the leaves, and are followed by small, globose, one-seeded fruit, thinly coated with gray wax. Blossoms with stamens are borne on one tree, and those with pistils on another. The catkins with stamens are one-fourth to one-half inch long, the pistillate catkins are smaller.

The common bayberry of northern states, *M. carolinensis*, belongs to this genus. An Asiatic species is cultivated for its edible red fruit.

BEECH FAMILY (*Fagaceae*)

Trees or shrubs. Leaves alternate. Flowers minute. Fruit an acorn.

OAKS (Genus *Quercus*)

Oaks are notoriously hard to identify. The species are numerous, leaves of diverse forms appear on the sterile branches and new growth, and hybrids arise which puzzle the most expert. Attention must be given the bark and the acorns, as well as to other characteristics, if one would be sure of the exact species, but our common oaks described below are among those most easily identified.

The minute flowers of the oaks lack petals. The stamens and pistil are in separate flowers. The staminate flowers are in drooping, string-like catkins; the fertile flowers are solitary or clustered in the leaf axils, and each is partly enclosed by a scaly involucre which becomes the cup around the base of the acorn.

The South has a number of laurel-leaved or willow-leaved oaks, whose relatively small, entire, or nearly entire,

smooth, coriaceous, shining leaves are very different from the leaves of northern oaks.

The most beautiful of our oaks is the majestic live oak, *Quercus virginiana*, with great spreading branches, deeply furrowed pale gray bark, evergreen elliptical or oblong leaves, one to four inches long, and narrow, dark acorns nearly an inch in length.

The scrub live oak, *Q. geminata*, is a smaller tree, whose leaves, one to three inches long, are very scurfy or pubescent beneath, and have strongly recurved margins. The acorn is half to three-fourths of an inch long.

The myrtle-leaved oak, *Q. myrtifolia*, is a shrub or small tree with short, dark green leaves that are oval or are broadened upward, and are only an inch or two long. The acorn is about half an inch long. This oak is found chiefly in dry sandy places.

Several dwarf oaks, closely allied to the above species, and evergreen like them, form miniature thickets, only two to three feet in height, in sandy soil.

The laurel oak, *Q. laurifolia*, is a symmetrical but relatively short-lived tree that is often planted along streets, and is incorrectly called water oak. It has a very dark bark that is never deeply furrowed. The narrowly oblong or elliptical leaves, two to four inches long, fall in February and March, when the new growth starts. The somewhat globose acorns are barely half an inch long, in a shallow, saucer-shaped cup.

The water oak, *Q. nigra*, has leaves broadened upward from a wedge-shaped base, and more or less toothed toward the apex. The acorn resembles that of the laurel oak.

The upland willow oak, or turkey oak, *Q. brevifolia* (*Q. cinerea*), is recognized from a distance by its gray-green foliage. The oblong or elliptical leaves, two to five inches long, are pale above and are grayish-pubescent beneath. The acorn is about half an inch long. This species is common in the high pineland country.

Our southern black-jack oak, *Q. Catesbaei*, is a common small tree of dry places, but its range does not extend to the extreme southern part of Florida. It has deciduous, deeply lobed leaves, six to nine inches long, on very short leaf-stalks. The lobes are very acute, and spread from a broad base. The thick, furrowed bark of old trees appears to be marked off in blocks. The acorns are large, nearly an inch long, and the cup, which is an inch or more broad, is oddly lined at the top by the upper scales, which are bent inward.

MULBERRY FAMILY (*Moraceae*)

Tree. Leaves alternate, evergreen, entire. Flowers minute, inside a small receptacle. Sap milky.

STRANGLING FIG (Genus *Ficus*)

The strangling fig of southern Florida, *Ficus aurea*, a tree of the same genus as the cultivated rubber trees and figs, has a remarkable life-history. Beginning in a precarious way, from a seed dropped by a bird on the trunk of some tree, it sends down to the ground, and around the tree, roots which branch, enlarge, and coalesce until the fig becomes a cylinder around its host, which is slowly but inevitably killed. The cylindrical fig trunk then grows inward, eventually becoming solid, and the fig stands as a forest tree in the place of its host, which is frequently the cabbage palm in the southern part of the Florida peninsula. With little evidence of its early crime, the strangling fig continues its aggressiveness by sending down aerial roots, which enter the ground and become stout props, and even trunks, so that the tree is extended in the manner of the noted banyan, which belongs to the same genus.

The yellowish green leaves are oblong or elliptical in shape, and are two to four inches long. The minute flowers of this genus are on the inside of a small fleshy receptacle, which in the edible fig becomes large in ripening. The mulberry and paper mulberry of this family bear their tiny flowers on the outside of the receptacle.

BUCKWHEAT FAMILY (*Polygonaceae*)

This family shows in nearly all its Florida representatives the characteristic three-angled achene, like a grain of buckwheat, around which the small corolla-like calyx, instead of falling away as the seed begins to ripen, remains as a covering, and often increases in size. The corolla is lacking in flowers of this family. Stipules in the form of a small sheath (ocrea) usually surround the stem at the base of each leaf; smaller sheaths (ocreolae) are present in the racemes, and, like the ocreae, show diversity of form, being entire, fringed, lobed, or pointed in the different genera.

The smartweeds, of old medicinal use, the annoying bindweed, the beautiful *Antigonon*, or mountain rose, of Mexico, often planted in Florida gardens, the docks, the prince's feather, the herb patience, which "groweth not in every man's garden," and the cultivated rhubarb, are among the many members of this family, as, of course, is also the buckwheat.

Our Florida species range from trees to weeds, and in northern Florida include a vine, *Brunnichia cirrhosa*, whose small flowers increase three or four times in length as the seeds ripen. Among the lesser plants a sorrel, *Rumex hastatulus*, is a common and rather attractive weed of winter and spring, when the reddish stems and ripening flower-clusters are noticeable.

THYSANELLA. WILD BUCKWHEAT. KNOTWEED (Genus
Thysanella)

Although the individual flowers of the buckwheat family are usually small, yet where many are crowded together and bloom in hundreds of racemes, as in these plants, they make a very attractive display. Low and bushy in growth, with many stems, *Thysanella fimbriata* is especially abundant on the hills of Polk County, in the interior of the peninsula. Where blue lupines blossom in winter and spring, this thysanella, ranging in color from palest shell-pink or white to rose, is beautiful in late summer and autumn, but, unlike the lupine, it blooms more or less throughout the year, and in the rocky soil near Miami, as well as on the hills of the interior of the peninsula, its flowers may be found at any season.

The stouter *T. robusta* usually blooms in white, but its flowers are sometimes tinged with pink. It is easily distinguished from the preceding species as its outer sepals are entire, or nearly so.

Thysanella fimbriata. Flowers 5-parted, small, pink or white, many, in many slender racemes 1-3 in. long. Outer sepals fringed. Stamens 8. Plants 1-2 ft. tall, much branched. Leaves alternate, narrow, 1-2 in. long. Ocreae fringed with bristles. Dry soil. Blooming chiefly in summer and fall. Fla. and Ga.

Thysanella robusta. Snowdrift. Similar to above species, but stouter, 1-3 ft. tall. Flowers usually white, outer sepals not fringed. Pinelands. Blooming all the year. Fla. peninsula.

DOG-TONGUE. WILD BUCKWHEAT. UMBRELLA PLANT
(Genus *Eriogonum*)

Like the thysanellas, this stouter wild buckwheat also blossoms at any time of the year, but, unlike it, the flowers are in small clusters, instead of in racemes, and are dotted



FIG. 7. Dog-Tongue
Eriogonum tomentosum

with yellow and terra cotta anthers. It is a common plant of dry pinelands, and is easily identified at any time by its stem leaves, which are green above, woolly and brown or gray beneath, and are sessile in whorls of three to six.

The less common *E. floridanum* has alternate leaves, and nodding clusters of greenish flowers clothed in silvery hairs.

Eriogonum tomentosum. Flowers small, white, green, or pinkish, woolly outside, 6-parted, in many erect clusters on upper branches. Each cluster is enclosed at base in a cup-like involucre. Plants 1-3 ft. tall. Stem leaves 1-3 in. long, in whorls of 3-6. Dry soil. Blooming chiefly from spring to fall. Fla. to S. C.

JOINTWEED. WILD BUCKWHEAT (Genus *Polygonella*)

A tall jointweed of slender growth, *P. gracilis*, is common in dry places in autumn. The leaves are far apart on the green, jointed stems, and often fall before the flowers open. Other species of low bushy growth are common toward the coast, and in late summer blossom in innumerable short racemes of tiny flowers, which attract the bees.

Polygonella gracilis. Flowers white, tiny, in many slender racemes 1-3 in. long. Plants 2-6 ft. tall, glaucous. Branches very slender. Leaves alternate, about 1 in. long. Dry soil. Blooming in fall. Fla. to S. C. and La.

Polygonella brachystachya. Flowers white, tiny. Racemes many, very short. Plants 1-2 ft. tall, much branched. Leaves narrow, very short. Sandy soil. Blooming in summer and fall. Fla.

Polygonella polygama. Flowers white, pink, or yellowish, tiny, in many racemes about 1 in. long. Plants 1-2 ft. tall, much branched. Leaves wedge-shaped, 1 in. long or less. Sandy soil near the coast. Blooming in summer and fall. Fla. to N. C.

SEA-GRAPE and PIGEON PLUM (Genus *Coccoloba*
(*Coccolobis*))

The handsome sea-grape, or shore-grape, *C. uvifera*, whose large glossy leaves are veined with red, grows as a low, widely branched tree or stout shrub near the coast of southern Florida. The racemes of acid fruit, of which jelly is made, have a slight resemblance to grapes, as the base of each flower increases in size around the ripening seed, and also becomes pulpy.

The pigeon plum, *C. floridana* (*C. laurifolia*), which also grows near the coast in the southern part of the peninsula, is a tree with oblong, entire leaves, two to four inches long and one to two inches wide. The racemes, two to four inches long, have edible pear-shaped fruit about one-third of an inch in length.

***Coccoloba uvifera*.** Tree or shrub. Flowers whitish, tiny, 5-parted, in racemes 4-10 in. long. Leaves alternate, entire, leathery, roundish, 3-8 in. wide, heart-shaped at base. Fruit roundish or pear-shaped, pale green or purple, not quite 1 in. in diameter. Near the coast. Blooming in spring and summer. Southern part of Florida peninsula.

GOOSEFOOT FAMILY (*Chenopodiaceae*)

Our plants of this family have minute, inconspicuous flowers, and minute, one-seeded fruit. They grow chiefly as weeds of waste land, and as unattractive plants of beaches and salt marshes.

The kochia, planted for ornament, is of this family, as are beets and spinach.

Wormseed, *Chenopodium anthelminticum*, a common weed, one to four feet tall, may be identified by its grooved stems, many minute green flowers, alternate, toothed leaves, and strong aromatic odor.

The glassworts or samphires, species of *Salicornia*, are

common in salt marshes, and are peculiar in their fleshy, jointed stems, four to twenty inches tall, which are apparently leafless, as the leaves are reduced to tiny scales. The minute flowers are difficult to find, as they are immersed in the thick upper joints. The stems are crisp and salt to the taste, and in some countries are eaten as a pot-herb and are pickled.

AMARANTH FAMILY (*Amaranthaceae*)

Flowers minute, often papery, in spikes or heads. Petals lacking. Sepals 2-5. Fruit minute, dry, one-seeded.

CARELESS. WATER-HEMP (Genus *Acnida*)

The most remarkable of this family in Florida is an annual weed known as careless, *Acnida australis*, a water-hemp whose phenomenal growth in one season from a tiny seedling to a tree-like plant, twelve to twenty feet in height, and a foot in diameter at the base, is a proof of the fertility of the drained Everglades soil where it grows. In this genus the stamens and pistils are on separate plants. The staminate flowers, borne in spikes, have five sepals, but in the seed-producing pistillate blossoms sepals as well as petals are lacking. The alternate, entire, slender-pointed leaves are sometimes a foot in length.

COTTON-WEED (Genus *Froelichia*)

Those whose interest in nature leads them occasionally to open a manual of botany, and to use a magnifying glass, find certain of the smaller flowers baffling. In the case of this plant it is difficult to decide whether the tiny papery tube inside the calyx is a toothed corolla to which

the stamens are adherent, or whether the corolla is lacking and the tube is nothing but united stamen filaments. It is a perplexing problem until one learns that these flowers have no corolla, and that the papery five-toothed tube, apparently with alternate anthers and petal-lobes, is formed of ten united stamens, five of which are sterile and end in sharp points between the fertile anthers. The dense wool on the outer surface of these flowers is a hindrance in dissecting them for analysis. The plants are common in dry soil during summer, when the tall stems, reddish and swollen at the joints, bear few leaves and many short spikes, which become woolly or cottony as the seeds ripen.

Froelichia floridana. Flowers minute, woolly, in compact spikes 1-2 in. long. Stems 2-6 ft. tall. Leaves opposite, narrow, 2-6 in. long, hairy or woolly beneath. Dry soil. Blooming spring to fall. Fla. and Ga.

Iresine paniculata. This plant is very different in appearance from *Froelichia*, as it bears a great number of minute silvery or greenish flowers in a plume-like inflorescence.

Flowers minute, many, in panicles. Stems 2-6 ft. tall, ribbed, swollen at joints. Leaves opposite, stalked, 2-6 in. long, broadest near base. Dry soil. Blooming chiefly in summer. Fla. to New Mexico and Ohio.

Among our other plants of this family are species of *Alternanthera*, with opposite leaves, and short, compact, greenish white or silvery heads of minute papery flowers, and the creeping *Lithophila vermicularis*, with short fleshy leaves, and similar flowering heads. These grow in sandy soil, chiefly near the coast. *Gomphrena dispersa*, of low growth, with similar flowering heads, and somewhat hairy leaves, is becoming a weed through the peninsula.

Showy amaranths and cockscombs are garden members of the family.

POKEWEED FAMILY (*Phytolaccaceae*)

Shrubby plants. Leaves alternate, entire. Corolla lacking. Sepals 4 or 5, petal-like. Fruit a berry or an achene.

BLOODBERRY (Genus *Rivina*)

This relative of the common pokeweed resembles that plant in habit, but is of much smaller growth, with slender racemes of little pink and white flowers, which are followed by bright red berries. It is not uncommon in the borders of thickets, and under the name of bloodberry is sometimes listed in florists' catalogues.

***Rivina humilis*.** Flowers very small, many, in racemes. Sepals 4, white tipped with rose. Stamens 4. Plants much branched, 1-2 ft. tall. Leaves broadest near base, pointed, 1-4 in. long. In woods and thickets. Blooming all the year. Fla. to Texas and Ark.

POKEWEED and SKUNK-BUSH (Genera *Phytolacca* and *Petiveria*)

A pokeweed, *Phytolacca rigida*, is common in waste places, where the stout reddish stems are conspicuous. It differs from the northern *P. decandra* in its more compact racemes, which are erect in fruit, instead of drooping. It also grows in hammocks, and sometimes becomes a small tree. The small white flowers have five sepals and ten stamens. The fruit is a small purple berry.

The ill-scented skunk-bush, *Petiveria alliacea*, one to four feet tall, with small greenish flowers in wandlike spikes four to twelve inches long, grows in thickets in the peninsula. The fruit is a small achene armed with reflexed spines.

BATIS FAMILY (*Batidaceae*)

Batis maritima. Saltwort. Low shrub, stems spreading, 1-4 ft. long. Leaves pale green, fleshy, opposite, strong-scented, 1 in. long or less. Flowers minute, in short, axillary, conical spikes. Stamens and pistils in separate spikes. Along the coast. Fla. to N. C. and Texas.

FOUR-O'CLOCK FAMILY (*Nyctaginaceae*)

This family, which gives the South American bougainvilleas to Florida gardens, and whose smaller member the four-o'clock is well known, is represented here by less noticeable plants. Among these are several species of *Boerhaavia*, which, though not at all showy, are rather interesting weeds of dry soil. They branch widely, and from midwinter to autumn bear minute pink, purple, or white flowers seated on the top of the small ribbed fruit. There is no corolla in the flowers of this family, but the calyx and bracts in a number of species are colored and corolla-like. The wavy-margined leaves of the common *Boerhaavia erecta* are broadest near the base, and are whitish beneath. The leaves are opposite, and a peculiarity of these weeds is that one leaf of each pair is larger than the other, an inequality in size that is continued on alternate sides of the stem from pair to pair.

A larger species of the family, *Pisonia aculeata*, seen in hammocks in the southern part of the peninsula, has the descriptive names of devil's claws, and pull-and-hold-back vine. It is viciously armed with stout recurved thorns, and in different localities and under different conditions it grows as a scrambling shrub, a vine, or a tree. The minute, greenish yellow, slightly fragrant flowers are in compact axillary panicles, two inches or more across, and bloom in winter and spring. Stamens

and pistils are in separate flowers and on different plants. The slender, club-shaped fruit, about one-third of an inch long, is ribbed, and has five rows of viscid glands. The smooth, entire leaves, one to three inches long, are either oval or are broadest at the base. Like those of the weed mentioned above, the leaves are often alternately unequal in size.

CARPET-WEED FAMILY (*Aizoaceae* (*Tetragoniaceae*))

This family is represented in Florida by low plants which spread in matted growth, as the name carpet-weed indicates. None of our species is especially noticeable. The corolla is lacking in flowers of this family, but the calyx of five sepals is colored and corolla-like. The fruit is a capsule.

The sea-purslane, *Sesuvium Portulacastrum*, a portulaca-like plant, grows in muddy and sandy places near the coast, and blooms in winter, as well as at other seasons. The solitary flowers in the leaf-axils are purple within and green without, and are slightly more than half an inch across. Very full of stamens they are, like the cultivated mesembryanthemums to which they are related, and each of the five sepals bears a small horn-like process near the tip. The oblong, opposite leaves, one-half to one and one-half inches long, are smooth and fleshy. The plants are sometimes cooked and eaten, but have a strong salt flavor.

Carpet-weed or Indian chickweed, *Mollugo verticillata*, is a common annual weed of orange groves and other cultivated land. Its many slender branches spread radially from the root, and bear small, apparently whorled leaves, and little white flowers in the leaf-axils.

PURSLANE FAMILY (*Portulacaceae*)

A small portulaca of low, matted growth, *Portulaca pilosa*, is common in sandy cultivated land, and other dry places. The rose-pink, five-petaled flowers, barely half an inch across, and with many stamens, are set close to the stem in the hairy axils of the short, narrow, fleshy leaves.

The yellow-flowered purslane, *P. oleracea*, that is so common a weed in other states, is less often seen in the peninsula.

CROWFOOT FAMILY (*Ranunculaceae*)

Flowers purplish, solitary, nodding, of 4 petal-like sepals. Petals none. Stamens many. Fruit an achene with feathery tail.

DWARF CLEMATIS and LEATHER FLOWER (Genus *Viorna* (*Clematis*))

The crowfoot family is less common in Florida than in northern states, where it is abundantly represented by buttercups, anemones, hepaticas, and other plants. Its most noticeable members here are species of clematis, whose flowers are followed by exaggeratedly plummy seed-heads. The corolla is lacking, but the calyx is colored and petal-like, though usually thick in texture. Many stamens and pistils fill the interior of the flower, but, instead of uniting to form a seedpod, each pistil ripens by itself, enclosing a solitary seed in its base, and increasing in length until it becomes a feathery gray plume, one to four inches long, and marvelously adapted for carrying the seed on an aerial voyage to new fields.

The dwarf clematis, *V. Baldwinii*, is an attractive winter flower of pinelands, and continues to bloom more or



FIG. 8. Dwarf Clematis
Viorna Baldwinii

less throughout the year. The fruiting-heads, like feathery gray pinwheels, are interesting, and so are the leaves, since they do not follow a uniform pattern but show diversity in form, the lower leaves being entire, and the upper variously cleft.

Our common leather flower, *V. reticulata*, with long, branching stems and many leaves, does not bloom so early as its dwarf relative. This clematis climbs upon shrubs and fences, but where these are lacking it gets along excellently well by staying on the ground and twining its leaf-stalks about grass stems, as if to show what it could do by way of climbing if it had the chance. The long-stalked flowers are fragrant, and following their blossoming the seedheads ripen rapidly into more numerous but somewhat shorter plumes than those of the dwarf clematis.

The local name of pine hyacinth, given to the dwarf clematis, shows as much imaginative genius as does the Florida custom of calling the large land-turtles "gophers," and the equally bizarre usage that names our true gophers "salamanders," yet as the name hyacinth holds memories of beauty it is not altogether inappropriate.

Viorna Baldwinii. Dwarf clematis. Pine hyacinth. Bells. Flowers bluish purple or pinkish, 1 in. long, bell-shaped, of 4 thick sepals, solitary, terminating stems. Plants 10-18 in. tall, sparingly branched. Leaves opposite, entire or cleft, 1-4 in. long. Pinelands. Blooming chiefly in winter and spring. Fla.

Viorna reticulata. Leather flower. Clematis. Flowers purple or reddish, 1 in. long, fragrant, long-stalked from leaf-axils. Sepals thick. Vine, climbing by leaf-stalks. Leaves of 7 or 9 leathery leaflets 1-3 in. long. Dry soil. Blooming in spring and summer. Fla. to S. C. and Texas.

Viorna crispa. Flowers bluish purple, more than 1 in. long. Sepals thin. Vine. Leaves of 3-9 thin leaflets. Damp places. Blooming in spring and summer. Fla. to S. C. and Miss.

CUSTARD APPLE FAMILY (*Annonaceae*)

Shrubs or trees. Leaves alternate. Petals 6. Sepals 3. Stamens many. Fruit pulpy.

PAPAW (Genus *Asimina*)

Showy papaw flowers ornament open pinelands from February to June. These low shrubs are easily identified, as the leaves and bark when bruised have a strong and peculiar odor, and the flowers, with their odd form of three large, spreading petals, and three smaller, converging ones, are unlike others. The way these flowers grow and grow—and grow—recalls eastern tales of bottled genii. In early winter the stems of our common *A. reticulata* are bare; in January brown, knoblike buds start, soon swelling and unfolding in crinkled petals that daily increase in size until in banners of creamy white they droop below the budding leaves.

In several species the flowers appear before the leaves; in others the leaves appear first. *A. reticulata*, whose inner petals are usually banded with purple at the base, is one of the former, and is widely distributed through the peninsula. *A. pygmaea*, one of the latter, is interesting on account of the unusual coloring of its flowers, which apparently start out to be white, but end in being dark purple, and between opening and withering show astonishing variety: opening buds are greenish; partly opened flowers may be cream-color streaked with purple; fully opened flowers on the same stem may show outer petals of white contrasting with inner petals of purple, while older flowers are often purple throughout.

Although the blossoming season of our papaws is from midwinter to summer they occasionally bloom at other times, and it is not uncommon to find *A. angustifolia* blossoming in October near Gainesville, and other species

flowering at Christmas in the southern part of the peninsula.

The oblong yellowish fruit, an inch or two in length, is edible, so much so, in fact, that it is not easily found, as insects and small animals are quick to devour it. The larger fruit of a hardier papaw, *A. triloba*, a small tree of this genus, is sold in several of the southern and central states.

An exotic species of this family, the climbing ylang-ylang, *Artabotrys*, with very fragrant flowers and peculiar fruit, is sometimes planted in southern Florida.

***Asimina reticulata*.** Flowers white, about 2 in. long at maturity, solitary from axils of leaves of preceding year, appearing before leaves. Petals 6, in two series. Shrub 1-3 ft. tall. Leaves oblong, leathery, 1-4 in. long. Pinelands. Blooming in winter and spring. Fla.

***Asimina parviflora*.** Flowers purple, nearly $\frac{1}{2}$ in. long, appearing before leaves. Leaves broadened upward, pointed, 2-6 in. long. Shrub 2-6 ft. tall. Sandy soil. Blooming in spring. Fla. to N. C.

***Asimina angustifolia*.** Flowers white or yellowish white, 2 in. long. Shrub 1-3 ft. tall. Leaves narrow, 2-8 in. long, appearing before flowers. Pinelands. Blooming in spring and summer. Fla. and Ga.

***Asimina obovata*.** Flowers white, large, terminating branchlets. Outer petals sometimes 3 in. long and 2 in. wide. Shrub 2-8 ft. tall. Leaves broadened upward, 2-4 in. long, appearing before flowers. Pinelands. Blooming in late winter and spring. Fla.

***Asimina pygmaea*.** Flowers 1 in. or more long, changing from greenish white to dark reddish purple. Stems 1-3 ft. tall, sometimes nearly prostrate. Leaves oblong or broadened upward, 2-6 in. long, appearing before flowers. Pinelands. Blooming in spring and summer. Fla.

POND-APPLE. ALLIGATOR APPLE (*Annona glabra*)

This large relative of the papaws is an evergreen tree, with oval or oblong pointed leaves, yellowish white flowers

about an inch long, and large, insipid fruit two to five inches in length. It grows near Lake Okeechobee, and elsewhere in wet places in the southern part of the peninsula.

Other species of *Annona* are found in Central and South America, and yield some of the most highly prized fruit of those regions,—the cherimoya, sugar-apple, custard-apple, soursop, and others.

MAGNOLIA FAMILY (*Magnoliaceae*)

Evergreen trees or shrubs. Leaves alternate, entire. Flowers solitary, fragrant, of 6 or more petals. Fruit cone-shaped.

GREAT MAGNOLIA and SWEET BAY (Genus *Magnolia*)

Although a native of the "sandhills" may say that he hunted a wildcat "over yonder in the bay," it does not follow that the wildcat in his wildness has become aquatic, for in Florida a dense growth of evergreen trees and shrubs in a low area, where water may stand in the rainy season, is known as a "bay."

In such bays, and on the borders of lakes and streams, the sweet bay, *Magnolia glauca*, grows, showing the elliptical, pointed leaf, that is so common a leaf-form in Florida, and bearing in spring and early summer fragrant flowers that are a small edition of those of the great magnolia. The silvery gray-green under surface of the leaves is a noticeable characteristic by which this beautiful magnolia may be identified at any time. The leaves and bark have an aromatic flavor not unlike that of the bay leaves used in cookery. The latter, however, are gathered from a laurel of the Mediterranean flora. A commercial oil is made from the sweet bay, and also from the star anise of this family.

The great magnolia, *M. grandiflora*, with leathery, shin-



FIG. 9. Papaw
Asimina pygmaea



FIG. 10. Sweet Bay
Magnolia glauca

ing leaves of somewhat variable form, is a conspicuous tree of our hammocks, and doubly so when ornamented with immense white flowers of intoxicating fragrance. It has long been noted as one of the most beautiful of all the broad-leaved evergreen trees of the world, and, like the sweet bay, is admirable for ornamental planting throughout Florida.

The peculiar cone-shaped fruit of the magnolias is interesting, as from it the scarlet seeds hang by slender extensile threads.

Allied to the magnolias is a star anise of northern Florida, *Illicium floridanum*, an evergreen, aromatic shrub with dark purple nodding flowers, one to two inches across, formed of twenty to thirty narrow petals.

Magnolia grandiflora (M. foetida). Great magnolia. Bull bay. Flowers white, fragrant, 6-9 in. across. Sepals 3, petals 6-12, stamens many. Large tree. Leaves thick, shining, oblong or oval, 5-8 in. long, rusty pubescent beneath. Hammocks and swamps. Blooming in spring and summer. Fla. to N. C. and Texas.

Magnolia glauca (M. virginiana). Sweet bay. Laurel magnolia. Small magnolia. Flowers white, fragrant, 2-3 in. across. Shrub or tree. Leaves elliptic or oval, 3-6 in. long, pale beneath. Fruit 1-2 in. long, red. Swamps. Blooming in spring and summer. Fla. to Mass. and Texas.

WATER LILY FAMILY (*Nymphaeaceae*)

The fragrant white pond lily, *Castalia odorata*, is abundant in many places in Florida, and the rare *C. flava*, with yellow flowers two to four inches across, is occasionally seen.

A large-leaved aquatic known as "bonnets," *Nymphaea macrophylla*, closely related to the cow lily, or spatterdock, *N. advena*, of northern states, is common in the peninsula. Where pineland ponds are drying in spring

this plant often shows a luxuriant erect growth that is quite different from its floating habit when the ponds are filled by summer rains.

Castalia odorata. Pond lily. Water lily. Flowers white, fragrant, 3-5 in. across, solitary, on long stalks. Sepals 4, petals many, stamens many. Leaves roundish, 3-9 in. across. In ponds, lakes, and slow streams. Blooming from spring to fall. Fla. to La. and northward.

Nymphaea macrophylla (Nuphar). Bonnets. Yellow lily. Flowers yellow, 1-2 in. across, solitary, on long stalks. Sepals 5-6, concave, yellow within. Petals many, stamen-like, narrow. Stamens many. Leaves oblong or broad, 8-20 in. long. In ponds, lakes, and slow streams. Blooming chiefly from spring to fall. Fla. to La.

POPPY FAMILY (*Papaveraceae*)

Prickly plants. Sap yellow. Flowers showy, yellow or white. Leaves alternate. Fruit a capsule.

PRICKLY POPPY (Genus *Argemone*)

Plants of this genus are allied to the bright red poppies of European grain fields, and to the golden California poppies of the West, but, unlike these relatives, the prickly poppies have developed defensive weapons,—stilettos their delicate spines are, which too readily become detached and remain in the hand that attempts to pick the flowers.

The white prickly poppy, *A. alba*, locally abundant in neglected fields, begins to bloom in early spring, and is a strikingly handsome plant, with gray-green foliage, and large white flowers.

The yellow prickly poppy, *A. mexicana*, an introduced weed, is not uncommon in waste places near towns, where it begins to bloom in late winter.

The large crinkled petals are protected in bud by bristle-armed, horned sepals, which fall as the flowers open. The



FIG. 11. White Prickly Poppy
Argemone alba

capsules of these two species are armored with many spines, which spread in a more and more threatening way as the seeds ripen, and the entire plants, on leaves and stems, bear many needle-like spines.

Argemone alba. Flowers white, 3-4 in. across. Sepals 2-3, petals 4-6, stamens many. Plants prickly-armed, 1-3 ft. tall, branched. Leaves 2-10 in. long, sharply lobed, gray-green. Dry soil. Blooming in spring and summer. Fla. to Texas and Mo.

Argemone mexicana. Mexican poppy. Devil's fig. Flowers yellow, 1-3 in. across. Plants prickly-armed, 1-3 ft. tall. Leaves blotched with lighter color. Waste places. Blooming from late winter to fall. Fla. to N. J. and Texas.

Argemone leiocarpa. Flowers yellow, 2-3 in. across. Stems and capsules smooth, leaves armed. Southern Fla.

MUSTARD FAMILY (*Cruciferae* (*Brassicaceae*))

Herbaceous. Leaves alternate. Flowers small. Petals 4. Stamens 6, two of them shorter than the others. Fruit usually a capsule.

A differently credulous age than ours attributed to mustard, or senvey as it was called, the most various healing properties. Herbalists declared, with apparently random enthusiasm, "it healeth smiting of Serpents and overcometh venom of the Scorpions and abateth Toothache and clenseth the Hair and letteth the falling thereof," and, "if it be drunk fasting it makes the intellect good."

In Florida the mustard family is chiefly represented by successful cosmopolitan species, which from too great zeal in multiplying have become troublesome weeds. Where cultivated land has been neglected the common wild mustards (*Brassica*) are sometimes so abundant that

when they bloom the earth becomes a field of the cloth of gold. And among the lesser weeds other cosmopolitan members of the same family are found—pepper-grass, *Lepidium virginicum*, with little pungent-flavored seedpods, and shepherd's purse, *Bursa Bursapastoris*, a weed variable in form, and called by many names. A native tansy-mustard, *Sophia pinnata*, with little fern-like leaves, minute yellowish flowers in racemes, and short seedpods, is sometimes common in dry soil. And the sea-rocket, *Cakile edentula*, a low, fleshy plant, with small white or purple flowers, and thick, two-jointed seedpods of mustard flavor, grows in sand on the coast.

WAREA (Genus *Warea*)

This native plant of delicate beauty is found chiefly near the coast and in the "ridge" country of the interior. Even when an autumn of little rain has dried much of the herbaceous vegetation in southern Florida pinelands, the warea still blooms through December and January, lifting its racemes above brown grasses and green zamias, and swaying in the ever-present breeze.

The densely-flowered racemes increase in length while blossoming, so that the open flowers at the top form a globular cluster, an inch or more in diameter. Slender, downward-curving seedpods ripen from the lower flowers while upper buds in the same raceme are opening, and the older flower-clusters seem, therefore, to be equipped with spidery legs, as though ready to drop down and scamper away.

Warea cuneifolia. Flowers white or tinged with purple, small, many, in terminal racemes. Sepals 4, petals 4, stamens 6. Seedpods narrow, nearly 2 in. long, on slender pedicels. Plants 1-2 ft. tall, slender, branched. Leaves wedge-shaped or narrow, about 1 in. long. Sandy soil. Blooming from summer to winter. Fla. and Ga.

CAPER FAMILY (*Capparidaceae*)

Herbaceous. Leaves alternate, 3-foliate. Petals 4, white. Stamens 9 or more. Fruit a capsule.

CATCHFLY (Genus *Aldenella* (*Polanisia*))

Mustard-like in its flowers and seedpods is this catchfly, whose stems and leaves are slightly sticky. Like the warea, this plant prolongs its season of bloom into the winter months, but, unlike it, the flowers are scattered along the leafy flowering-stems, and the leaves are formed of thread-like leaflets. Although this catchfly is found in dry pinelands, it seems to thrive best when as a weed it takes possession of neglected fields.

***Aldenella tenuifolia*.** Flowers white, small, in loosely-flowered terminal racemes 2-10 in. long. Sepals 4, petals 4, unequal in size. Stamens 9-12. Seedpods slender, 2 in. long. Plants 1-3 ft. tall, branched. Leaves of 3 very narrow leaflets. Sandy soil. Blooming from late winter to fall. Fla. and Ga.

SUNDEW FAMILY (*Droseraceae*)

Small plants with basal rosettes of reddish, glandular leaves. Flowers small, white or pink. Fruit a capsule.

SUNDEW (Genus *Drosera*)

The extraordinary habits of insectivorous plants make them of especial interest to the student of flowers. Of the insect-devouring plants in Florida the little sundews are the most abundant, spreading their rosettes of glistening leaves by thousands in marshes, low pinelands, and wet sands, and catching myriads of insects, which they devour in their own peculiar way.

Each small leaf bears many tentacle-like hairs, sticky at the tips, and capable of moving, like scores of greedy fingers, whenever an unlucky insect chances to alight on the leaf. As the tiny tentacles converge on their prey the leaf curls inward, and a digestive ferment is poured out that dissolves the soluble parts of the insect's body. This secretion, enriched by the dissolved nutriment, is absorbed by the leaf, which later opens again, ready for more food.

Insectivorous plants are most abundant where the soil is poor in nitrogen, and in such locations a plant's ability to increase its food-supply in this way is of especial benefit to it.

Drosera intermedia. Flowers white, small, several in raceme. Sepals, petals, and stamens usually 5 each. Flowering-stem 2-8 in. tall. Rosette of leaves 2-5 in. across. Leaves small, broadened upward, leaf-stalks not glandular. Bogs and wet sand. Blooming from spring to fall. Fla. to La. and northward.

Drosera capillaris. Flowers pink. Flowering stem 3-15 in. tall, with several or many flowers. Wet places. Fla. to S. C.

Drosera rotundifolia. Flowers white. Flowering-stem 8-12 in. tall. Leaves small, roundish. Leaf-stalks glandular. Bogs and wet sand. Fla. to Ala. and northward.

Drosera brevifolia. Flowers white, $\frac{1}{2}$ in. across. Few. Flowering-stem 2-6 in. tall. Leaves very short, wedge-shaped. Rosette of leaves only about 1 in. across. Low pinelands. Blooming in winter and spring. Fla. to N. C.

Drosera filiformis. Flowers purple, rarely white, $\frac{1}{2}$ -1 in. across. Leaves thread-like, 6-15 in. long. Wet places, chiefly near the coast. Blooming in spring and summer. Fla. to Mass.



FIG. 12. Spotted Trumpet-leaf
Sarracenia minor

PITCHER-PLANT FAMILY (*Sarraceniaceae*)

Low plants of marshy places. Leaves hollow, trumpet-shaped. Flowers yellow or purple, solitary, on long stalks. Fruit a capsule.

PITCHER-PLANT. SPOTTED TRUMPET-LEAF. INDIAN
DIPPER (Genus *Sarracenia*)

The most common of this genus in Florida, and the most interesting of all our insect-catching plants, is the spotted trumpet-leaf, *S. minor*, whose hollow leaves are deadly traps for wandering insects. The clustered leaves are locally abundant in low pinelands in spring and summer, their color ranging through shades of green and yellow, veined with crimson, and tinged with pink above. With the young leaves rise the long-stemmed flowers, with stiff calyx, drooping petals of light yellow, and odd, parasol-like expansion of the style.

In this species no rain can enter the pitcher, for the tip of the leaf expands as a dome over the opening, covering and partly concealing it. A winged border leading from the ground to this opening is edged with a nectar that lures insects to ascend. The inside of the dome, too, has a sweet secretion, and the trap is not only well baited, it is also well formed to keep its prey. On the back of the leaf, opposite the opening, are white, translucent spots, like windows, through which winged insects, once they have entered, vainly try to escape. The way by which they entered being darkened by the overarching dome, or hood, they seek the light, and as flies in a house dash against the windows so these trapped insects try to find a way out through the light spots in the leaf. Exhausted, they fall at last into the base of the leaf, where a fluid is secreted that soon stupefies them, and in which they perish, yielding in dissolution food to their treacherous host.

There is still another peculiarity in these leaves: the interior is lined, for a little distance below the opening, with smooth, stiff, downward-pointing hairs, making the easiest possible descent into the base, but—*facilis descensus Averni*—ascent against these sharp points is, to the average insect, impossible, and death is certain. A zone of darker color in the lower part of an opened leaf shows the position of the specialized secreting cells below the zone of slippery hairs. The secretion in the leaves of different species of pitcher-plants is increased by the presence of captured insects. It contains an active enzyme that digests protein, and its action on the victims captured soon forms a nutrient solution that is absorbed by the leaf, which in this peculiar way devours its prey.

Yet, astonishing as it may seem, a few species of flies and small moths make their homes within these pitchers, and are immune to the secretion that is fatal to others. Their larvae use the food supply the plant has secured, and feed on the inner surface of the leaves, finally pupating within them.

On opening the base of a leaf, the remains of flies, beetles, and many ants are found, filling it sometimes to a depth of several inches. Living in this unsavory collection a pale gray larva is often seen, not half an inch in length, and so nakedly translucent that the inner workings of its small body seem nearly as visible as are those of a clock in a glass case.

Several other species of pitcher-plants, with leaves of peculiar and diverse forms, veined with crimson and purple, are found in northern and northwestern Florida, and are briefly described below.

Sarracenia minor (S. variolaris). Flowers yellow, about 2 in. across, solitary on stalk 6-20 in. tall. Sepals 5, petals 5, stamens many. Leaves basal, hollow, tubular, 6-20 in. long, ending in an overarching hood. Low pinelands and marshes. Blooming in spring. Fla. to N. C.

Sarracenia flava. Flowers yellow, 3-4 in. across. Leaves 1-3 ft. tall, sometimes yellow and crimson, wing narrow, hood nearly erect, roundish, flaring from a narrowed base. Bogs and wet pinelands. Fla. to Va.

Sarracenia psittacina. Flowers purple or maroon, 1-2 in. across. Leaves 2-6 in. long, recumbent, spotted with white above, wing broad, hood curved over opening. Wet pineland. Semi-aquatic. Fla. and Ga.

Sarracenia Drummondii. Flowers purple, 2-4 in. across. Leaves 1-3 ft. tall, marked with purple and white above, hood roundish, erect, margin undulate. Bogs and swamps. Fla. and Ga.

Sarracenia purpurea. Flowers maroon or purple, 1-2 in. across. Leaves 3-10 in. long, hood erect. Bogs. Fla. and northward.

SAXIFRAGE FAMILY (*Saxifragaceae*)

DECUMARIA (*Decumaria barbara*)

Shrub, climbing high by aerial rootlets. Flowers white, small, slightly fragrant, in terminal panicles. Petals 7-10, stamens many. Fruit a ribbed capsule. Leaves opposite, entire or slightly toothed, shining above, usually oval or broadest near base, 2-4 in. long. In low woods. Blooming in spring. Fla. to La. and Va.

VIRGINIA WILLOW FAMILY (*Iteaceae*)

Shrub. Leaves alternate. Flowers small, white, in racemes. Sepals, petals, and stamens 5 each. Fruit a capsule.

VIRGINIA WILLOW. WASHINGTON PLUME (Genus *Itea*)

Around many Florida lakes, and by many streams, is a swampy border of dense vegetation in which sweet bay, fetterbush, loblolly bay, and other attractive shrubs and trees bloom. Against this mass of green that rims the

water, the finger-like racemes of Virginia willow flower from February to June, lifting their white blossoms against a curtain of Spanish moss, or bending low over the water.

This shrub in its native habitat grows only in damp soil, but adapts itself to drier locations when brought under cultivation, and long ago was introduced in England for ornamental planting. Since it is not a willow, and as it is common in other states as well as in Virginia, the name Virginia willow is neither accurate nor descriptive. A local name in Florida is Washington plume.

Itea virginica. Flowers white, about $\frac{1}{4}$ in. across, in dense terminal racemes 2-6 in. long. Petals narrow. Shrub 2-8 ft. tall. Leaves oblong, pointed, 2-5 in. long, minutely toothed. Swamps. Blooming from midwinter to early summer. Fla. to Pa., La., and Mo.

WITCH-HAZEL FAMILY (*Hamamelidaceae*)

Large tree. Leaves alternate, roundish, deeply lobed, deciduous.

SWEET GUM. RED GUM. ALLIGATOR TREE (Genus
Liquidambar)

The sweet gum is very common in many places in Florida, and its dark green, almost star-shaped leaves are among the easiest to identify from a passing car. These shining leaves have an agreeable odor when crushed, and the sap—liquid amber—hardens into a fragrant resin.

Beautiful autumn colors of deep red, purple, and bronze make the trees as conspicuous in the peninsula, where early frosts are unknown, as they are in colder states. The foliage is late in falling here, and in April the trees, which are of handsome pyramidal form, are again in leaf.

Liquidambar Styraciflua. Large tree. Branches usually with corky ridges. Leaves stalked, 3-7-lobed, mostly 3-6 in.



FIG. 13. Virginia Willow by Lake Osceola

across, toothed. Flowers minute, in globular heads. Sepals and petals none, stamens many. Stamens and pistils in separate heads on same tree. Fruiting-heads globose, about 1 in. in diameter, consisting of horned capsules. Damp woods. Blooming in spring. Fla. to Conn., Texas, and Mo.

ROSE FAMILY (*Rosaceae*)

Prickly shrubs, trailing or erect. Leaves alternate, of several leaflets. Flowers white, petals 5.

CHEROKEE ROSE and MACARTNEY ROSE (Genus *Rosa*)

Our winter-blooming roses are not confined to cultivated grounds; over wayside fences the beautiful Cherokee climbs, sometimes sending long stems over adjacent citrus trees, and opening large white flowers in contrast with the golden fruit.

The Macartney rose, also found on roadsides, resembles the earlier species, and is often incorrectly called Cherokee rose, but its flowers are of a warmer white, and are slightly smaller, they also open more widely, so that the petals seem to be turned backward, but the most marked difference is in the leaves, which are of five or more leaflets, instead of three.

Neither of these roses is native; both were introduced from Asia many years ago, and have become naturalized in the South.

***Rosa cherokeeensis* (*R. laevigata*).** Cherokee rose. Flowers white, 2-3 in. across, solitary. Sepals 5, petals 5, stamens many. Stems long, prickly. Leaves evergreen, shining, of 3 leaflets. Fruit bony achenes inside a thickened receptacle. Roadsides. Blooming in winter and spring. Fla. to Ga. and Texas.

Rosa bracteata. Macartney rose. Flowers similar to above species, but calyx is silky and is surrounded by an involucre of broad bracts. Stems very prickly. Leaves evergreen of 5-11 leathery leaflets. Roadsides and waste places. Blooming in spring and summer. Fla. to Va. and Miss.

BLACKBERRY. BRAMBLE (Genus *Rubus*)

Blackberries in the Florida peninsula begin to bloom in midwinter. One of the most common and most attractive is a trailing dewberry, *R. trivialis*, whose flowers are like small roses, and have a faint fragrance. The berries are ripe in April in the southern part of the state.

Among the many curious theories that man has invented to account for the origin of different characteristics of plants (concerning which he still knows little) the conclusion of an "herbalist—astrologer" of the seventeenth century has, at least, the merit of being logical. After declaring the blackberry bush to be under the dominion of "Venus in Aries," he adds: "If any ask the Reason why Venus is so prickly? Tell them 'tis because she is in the house of Mars."

Rubus trivialis. Dewberry. Flowers white, about 1 in. across. Sepals 5, petals 5, stamens many. Stems long, trailing, prickly. Leaves evergreen, of 3 or, rarely, 5 leaflets. Fruit black, juicy, edible. Sandy soil. Blooming in winter and spring. Fla. to Va. and Texas.

Rubus cuneifolius. Flowers white or pinkish, nearly 1 in. across. Stems erect, shrubby, prickly, 1-4 ft. tall. Leaves of 3 or 5 leaflets, downy beneath. Fruit black, edible. Sandy soil. Blooming in spring. Fla. to Conn. and La.

Rubus floridus. Flowers white, 1 in. or more across. Leaves of 3 leaflets, not downy beneath. Stems erect or spreading, 2-6 ft. long, prickly. Fruit edible. Thickets. Fla. and Ga.

APPLE FAMILY (*Malaceae*)

Shrubs or trees. Leaves alternate. Flowers small, white, in flat-topped clusters. Petals 5. Fruit pulpy, seeds several.

HAWTHORN. WHITE THORN. HAW (Genus *Crataegus*)

These shrubs and trees, with thorny branches, bear many clusters of little roselike flowers, which are followed by little red or yellow apple-like fruit.

The hawthorns in recent years have been separated into so great a number of species that it is difficult for botanists themselves to be positive in identifying them. Many hundreds of species are found in America; two that show a marked difference in leaf form are given below.

The chokeberry, *Aronia*, a thornless shrub of the same family, is sometimes cultivated for its attractive flowers and conspicuous fruit. The lower surface of the leaves, the calyx, and the pedicels are downy.

***Crataegus viridis*.** Flowers white, about $\frac{1}{2}$ in. across, in flat-topped clusters. Stamens usually 20. Small tree, sometimes thornless. Leaves wedge-shaped at base, 1-3 in. long, toothed, shining above, paler beneath. Fruit red, small. Low grounds and damp woods. Blooming in late winter and spring. Fla. to Va., Texas, and Mo.

***Crataegus apiifolia*.** Flowers similar to above species. Anthers red. Fruit scarlet. Leaves roundish, about 1 in. long, deeply 5-7-cleft, lobes toothed. Swamps and low grounds. Fla. to Va., Texas, and Mo.

***Aronia arbutifolia*.** Chokeberry. Flowers white or tinged with red, nearly $\frac{1}{2}$ in. across, in flat-topped clusters. Stamens many, anthers reddish. Shrub 3-10 ft. tall. Leaves 1-3 in. long, oblong or oval, minutely toothed. Fruit red, small. Low thickets. Blooming in winter and spring. Fla. to La. and northward.

PLUM FAMILY (*Amygdalaceae*)

Shrubs or trees. Leaves alternate. Flowers small, white or whitish. Petals 5. Fruit a drupe, seed solitary.

GOPHER APPLE, or GROUND OAK, and COCOA PLUM (Genus *Chrysobalanus*)

The gopher apple, a dwarf relative of the plums and cherries, is a common shrubby plant of dry places where, spreading by underground stems, it forms miniature thickets, seldom a foot in height. The leaves so much resemble those of the narrow-leaved oaks that until the shrubs are in bloom they are sometimes mistaken for young oaks. The slightly pulpy fruit, about an inch long, is edible, though scarcely desirable.

The larger cocoa plum of the same genus is a handsome, glossy-leaved shrub or small tree of southern Florida. The insipid plum-shaped fruit is sometimes eaten.

A peculiarity of the flowers, easily seen through a magnifying glass, is that the style does not rise from the top of the seed-vessel but, instead, comes from the base.

***Chrysobalanus oblongifolius*.** Gopher apple. Ground oak. Flowers small, whitish, many, in terminal panicles. Stamens many. Shrub 4-18 in. tall. Leaves leathery, shining, oblong, 2-5 in. long, sometimes narrowly wedge-shaped. Dry soil. Blooming in spring and summer. Fla. to Ga. and Miss.

***Chrysobalanus Icaco*.** Cocoa plum. Flowers white, small, in few-flowered axillary panicles. Shrub 4-30 ft. tall. Leaves leathery, shining, roundish or broadest at top, 1-3 in. long. Fruit oval or round, 1 in. or more long, yellow or black. Sandy soil. Blooming chiefly in spring and summer. Southern peninsula Fla.

PLUMS and CHERRIES (Genus *Prunus*)

Several wild plums are found in Florida, growing as shrubs or small trees, and bearing many clusters of white



FIG. 14. Gopher Apple
Chrysobalanus oblongifolius

flowers in late winter or early spring, before the leaves appear. The hog plum, *P. umbellata*, has oblong or oval toothed leaves, one to two inches long, and small, globose, blackish fruit that is bitter and acid. The Chickasaw plum, *P. angustifolia*, has oblong, pointed leaves, two to four inches long, and red or yellow edible fruit.

The common wild cherry, *P. serotina*, which grows from Florida to Nova Scotia and Dakota, blooms here in February and March and ripens its fruit in May and June. The small white flowers are in racemes which terminate the branches. The tree has a bitter bark, and oblong or elliptic toothed leaves, two to six inches long.

MIMOSA FAMILY (*Mimosaceae*)

Flowers minute, in globose or oblong pink, yellow, or whitish heads. Leaves alternate, compound. Fruit a legume.

Several shrubs and trees of this family are cultivated in Florida. The bright yellow flowering-heads of popinac, or oppopanax, *Acacia Farnesiana* (*Vachellia*), are noted for their agreeable fragrance, and have long been used in the making of choice perfumery. This thorny shrub or small tree, which has become naturalized in Florida, has short, twice-pinnate leaves formed of many tiny leaflets, globular, stalked flowering-heads, and thick seedpods, one to three inches long. Acacias of Arabia and northern Africa yield the gum arabic of commerce.

The quick-growing Lebbeck tree, or woman's-tongue tree, *Albizzia Lebbek*, from Asia, with handsome yellowish and green flowering-heads, and long seedpods, is planted in southern Florida.

SENSITIVE BRIAR (Genus *Morongia* (*Schrankia*))

These attractive plants trail richly colored green and bronze leaves and stems over the ground, open dainty heads

of delicately scented pink blossoms, and at night fold their tiny leaflets in so-called sleep. Touch a stem, and every leaf and leaflet along its prickly length droops immediately. So sudden is the movement, and so strange, that it was once fancied to be a protective device, by means of which injurious insects and animals would be frightened away, but such theories, though tempting to a facile imagination, are of extremely doubtful value.

The flowers, like others of this family, depend for their display on the long stamens. The calyx is minute, and the tiny five-lobed corolla is inconspicuous, but the flowers are densely crowded together in globular heads, which seem like pink balls of delicate stamens.

Morongia angustata. Flowers bright pink, minute, in stalked, globular heads about $\frac{3}{4}$ in. in diameter, from leaf-axils. Stamens usually 10. Seedpods prickly, narrow, 2-6 in. long. Stems prostrate, prickly, 2-6 ft. long. Leaves twice-pinnate, of many tiny leaflets. Dry soil. Blooming from late winter to fall. Fla. to Va., Texas, and Tenn.

Morongia uncinata. Similar to above species, differing chiefly in prominent veining of lower surface of leaflets.

SENSITIVE PLANT. MIMOSA (Genus *Mimosa*)

This sensitive-leaved mimosa grows in damp places, where its stems spread over the ground, bearing delicate leaves of many small leaflets, and erect flowering-stalks tipped with minute pink flowers in headlike spikes. Unlike the sensitive briar, it is not prickly but is more or less roughened with stiff hairs.

The noted sensitive plant, *Mimosa pudica*, the subject of many interesting experiments, belongs to this genus. It is easily grown in Florida, and in some places is becoming naturalized.

Mimosa strigillosa. Flowers pink, minute, crowded in long-stalked, oblong heads, about 1 in. long, from leaf-axils.

Stems prostrate, rough with rigid hairs. Leaves twice-pinnate, of many small leaflets. Seedpods oblong or oval, rough-hairy, about 1 in. long, 1-4-jointed. Damp soil near streams. Blooming in spring and summer. Fla. to Texas.

CAT'S-CLAW. BLACK BEAD (Genus *Pithecolobium*)

These shrubs of southern Florida are remarkable for their peculiarly twisted seedpods, two to five inches long, which open when ripe and disclose shining black seeds with bright red arils. Occasionally shrubs are found in which the arils are white. Both flowers and seedpods are seen in winter, as well as at other seasons.

The closely allied tropical rain-tree, *Samanea Saman*, with large compound leaves, and showy flowering-heads in which the long stamen filaments are shaded from pale pink to crimson, is sometimes planted for ornament in Florida.

***Pithecolobium guadalupense*.** Flowers dull yellowish, minute, many, in globose, stalked heads. Calyx and corolla 5-lobed, stamens many, filaments long, united at base. Unarmed shrub or small tree. Leaves evergreen, of 4 leathery, oblique leaflets 1-2 in. long. Sandy soil near the coast. Blooming chiefly in spring and summer. Southern peninsula Fla.

***Pithecolobium Unguis-cati*.** Armed shrub or small tree, much branched. Two stout thorns at base of leaf-stalks. Leaflets 4, usually smaller than in above species. Southern peninsula Fla.

SENNA FAMILY (*Cassiaceae*)

Flowers slightly irregular. Sepals and petals 5 each, stamens 10 or less. Leaves alternate. Fruit a legume.

The most widely noted of the cultivated members of this branch of the pea family is the royal poinciana, a tree whose striking beauty has caused it to be carried from

its native Madagascar to nearly every warm country of the world. The dwarf poinciana, *Caesalpinia*, and the Jerusalem thorn, *Parkinsonia*, have become naturalized in parts of southern Florida.

The red-bud, or Judas tree, *Cercis canadensis*, which blooms on Virginia hillsides with wild plums and flowering dogwood, is an ornamental native tree of this family. It is found in northern Florida and in the northern part of the peninsula, and is easily identified by the rose purple or pink flowers borne in many clusters along the bare branches in early spring. The roundish leaves are from two to five inches across.

PARTRIDGE PEA (Genus *Chamaecrista*)

Partridge peas, our most common native plants of this family, are found chiefly in dry pinelands, where with bushy growth of many reddish stems *C. brachiata* begins to bloom in late winter, and even in the following December shows a few yellow flowers along with many smooth brown seedpods. Both this species and *C. aspera* are widely distributed through the peninsula.

The flowers of the partridge peas are not pea-shaped, but are irregular nevertheless, one or two of the petals being larger than the others. The stamens, too, are unequal in size, and occasionally some of them are sterile. The pinnate leaves are formed of many leaflets, which in the late afternoon "go to sleep" for the night.

***Chamaecrista brachiata*.** Flowers yellow, 1 in. across, from leaf-axils. Stems 1-3 ft. tall, much branched. Leaves of 18-28 small leaflets. Seedpods narrow, 2-3 in. long. Dry pinelands. Blooming from late winter to fall. Fla.

***Chamaecrista aspera*.** Flowers yellow, much smaller than above species. Stems and seedpods very hairy. Seedpods about 1 in. long. Leaflets 40-50. Pinelands and waste places. Blooming from spring to fall. Fla. and Ga.

WILD SENNA (Genus *Cassia*)

Long and narrow seedpods are characteristic of our wild sennas, of which Florida has several species of stout growth. The strong-scented leaves, formed of several rather large leaflets, bear a small gland, either between the lowest pair of leaflets or near the base of the leaf-stalk. Although blooming chiefly in summer, the bright yellow flowers, which are nearly regular in form, are seen in winter in the warmer parts of the state. The species that grow as weeds of waste grounds vary greatly in height, and sometimes bloom when only a few inches tall.

Cassia occidentalis. Flowers yellow, $\frac{3}{4}$ in. across, in short racemes from leaf-axils. Stamens 10, unequal. Stems 1-4 ft. tall, branched. Leaves of 8-12 leaflets 1-2 in. long, gland at base of leaf-stalk. Seedpod 3-5 in. long, with cross-partitions. Waste places. Blooming from late winter to fall. Fla. to Va., Texas, and Ind.

Cassia Tora. Flowers similar to above species. Leaves of 4-6 leaflets, gland between lowest pair. Seedpods 6-8 in. long. Waste places. Fla. to Va., Texas, and Ind.

Cassia ligustrina. Flowers about 1 in. across, in panicles. Stems 3-8 ft. tall, grooved. Leaflets 10-16. Seedpods 3-5 in. long. Swamps and thickets. Blooming from spring to fall. Fla.

NICKER BEAN (Genus *Guilandina* (*Caesalpinia*))

This great straggling vinelike shrub, fearfully armed with hooked prickles, is found near the southern shores of the Florida peninsula. Even when not in bloom it is noticeable because of its great twice-pinnate leaves and large seedpods, which are thickly covered with straight prickles. The smooth grayish seeds are sometimes strung in necklaces.

Guilandina Crista. Flowers dull yellow, about $\frac{1}{2}$ in. across, in racemes or panicles. Shrub, spreading or climbing, prickly-armed. Leaves 1-2 ft. long, of many leaflets. Seed-pods oval, 2-3 in. long, seeds few, large. Chiefly near the coast.

KRAMERIA FAMILY (*Krameriaceae*)

Small prostrate plant. Flowers red, irregular. Leaves alternate. Fruit hard, 1-seeded.

KRAMERIA (Genus *Krameria*)

This *krameria*, with silky grayish leaves, is local in its distribution in Florida, but is common in a number of places in the interior. The dark red flowers, about half an inch across, are very irregular in form, and by some botanists the genus is placed in the polygala family. The unequal, petal-like sepals, which are red inside, are larger than the petals. Three of the latter are on claws that are united to one another and to the stamens; the other two petals are smaller, sessile, roundish, and thick. The woody fruit, one-third of an inch across, is remarkable in being both downy and spiny.

Krameria secundiflora. Flowers reddish, small, solitary from leaf-axils. Sepals 5, petals 5, stamens 4. Stems 6-15 in. long, usually prostrate. Leaves narrow, sharp-pointed, mostly less than 1 in. long. Fruit globose, not splitting open. Sandy soil. Blooming in spring and summer. Fla. to New Mexico and Kan.

PEA FAMILY (PULSE FAMILY) (*Leguminosae* (*Fabaceae*))

Flowers irregular, formed of 1 upper petal, the *standard*; 2 lateral petals, the *wings*; and 2 lower petals, somewhat united, the *keel*. Stamens usually 10. Leaves alternate. Fruit a legume.

Exceptions to usual form:

Amorpha.....wings and keel lacking

Erythrina.....wings and keel very short

Petalostemum and *Kuhnistera*...flowers of

5 nearly similar petals alternating with

5 stamens.

"If I should describe unto you all the kinds of Pulse, I should unfold a little world of varieties therein, more known and found out in these days than at any time before."

From JOHN PARKINSON'S *Paradise in Sole*, 1656.

Ornamental woods, dyestuffs, foods, and medicines are yielded by this large and important family of plants, and our interesting predecessors of only a few centuries ago found another and quite different use for the leaves of a certain species—*Trifolium pratense*, to be exact—which were believed to be "very noisome to witches." They also recorded that melilot of this family would "strengthen the Memory," and "comfort the Head and Brains." And perhaps in ascribing to the common plants about them influences so beneficial they were not so far wrong as it may appear, for they touched a fundamental truth, in spite of their bizarre belief.

Our Florida plants of this family are very numerous, and some are very ornamental. The Cherokee bean is as striking as the Cherokee rose, and the flowers of our beautiful butterfly pea are larger than those of the cultivated sweet peas.

Cross-pollination may be observed in different species where the stamens are hidden within the folded keel until an insect, alighting on the flower, pushes the keel down by its slight weight, releasing the stamens which scatter their pollen, some of it remaining on the insect until it is brushed off on the protruding stigma of the next flower visited.

The pea-shaped flowers are a distinguishing characteristic by which plants of this family are easily recognized, as, with few exceptions, their form is similar to that of the

cultivated peas. The stamens in nearly all our species are ten in number, and the filaments are generally more or less united. The seedpods show variety in form, and are an aid in determining the genus.

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FIG. 15. Butterfly Pea
Clitoria Mariana

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***Sophora tomentosa*.** Shrub 3-10 ft. tall. Leaves of 11-17 oblong or oval leathery leaflets, downy when young. Flowers yellow, nearly 1 in. long, in racemes. Stamens separate. Seedpods 2-5 in. long, constricted between the seeds. Near the coast. Blooming from spring to fall. Fla. peninsula and Keys.

***Baptisia LeContei*.** False indigo. Plant 1-2 ft. tall, much branched. Leaflets 3, broadened upward, about 1 in. long. Flowers yellow, nearly $\frac{1}{2}$ in. long, in few-flowered racemes, standard broad. Stamens separate. Seedpods inflated, pointed, small. Sandy soil. Blooming in spring and summer. Fla. and Ga.

RATTLE-BOX (Genus *Crotalaria*)

Our most common peas of early winter are the rattle-boxes, which grow in sandy soil, and bloom more or less all the year. A chief characteristic is the oblong inflated seedpod in which the ripe seeds rattle. Our species are very variable in size and in leaf form. The standard is broad, and is often tinged with red or brown on the outside. The showy *C. retusa* has been advertised in florists' catalogues as "dwarf golden yellow-flowering pea." *C. Saltiana*, a recent immigrant, has become a common weed near St. Petersburg.

A tall Asiatic species is cultivated in India for its strong fibers, from which cordage and canvas are made.

***Crotalaria Purshii*.** Flowers yellow, nearly $\frac{1}{2}$ in. long, in few-flowered racemes. Pod 1 in. long. Stems 10-20 in. long, erect or spreading. Leaves 1-foliate, variable, usually nar-

row, 1-4 in. long. Stipules conspicuous, extending down the stem. Sandy soil. Blooming all the year. Fla. to Va. and La.

Crotalaria rotundifolia. Similar to above species, but leaves are oval, and shorter. Whole plant hairy. Fla. to Va. and Miss.

Crotalaria retusa. Flowers 1 in. long, in terminal racemes. Pod 1-2 in. long. Stems 1-3 ft. tall. Leaves 1-foliate, 1-4 in. long. South Fla.

Crotalaria incana. Flowers about $\frac{1}{2}$ in. long, in terminal racemes. Pods 1 in. or more long, drooping. Stems 2-6 ft. tall. Leaflets 3, oval or broadened upward, about 1 in. long. Fla.

Crotalaria pumila. Flowers small, many, in short racemes. Pods small. Stems spreading, 2-3 ft. long, often forming dense mats. Leaflets 3. Fla. peninsula and Keys.

LUPINE (Genus *Lupinus*)

These beautiful southern lupines are conspicuous, even when not in bloom, for the plants, which grow in groups of spreading stems in dry soil, have a dense foliage of silky gray leaves. Unlike northern lupines, whose leaves are palmately divided into several leaflets, our two species have entire leaves. The blue lupine is abundant on hills in the interior of the peninsula, and in certain places near the coast. Its flowers vary in intensity of color, and the standard is blotched with purple or white in the center.

The less common *L. villosus*, with similar leaves, blooms in a rare combination of cream color and crimson, changing to pink and maroon as the flowers wither.

Lupinus diffusus. Blue lupine. Deer cabbage. Flowers blue, about $\frac{1}{2}$ in. long, many, in terminal racemes 3-12 in. long. Pods 1 in. long, woolly. Stems 1-2 ft. tall, erect or spreading. Leaves 1-4 in. long, oblong or broadened upward, densely silky. Sandy soil. Blooming from midwinter to early summer. Fla. to N. C.

CLOVERS AND THEIR ALLIES

Several introduced plants that are closely allied to the clovers are occasionally found on roadsides and in waste places in the peninsula. They are of low growth, with three-foliate leaves, and have very small flowers.

Medic, or bur-clover, *Medicago denticulata*, has small wedge-shaped leaflets, clusters of two to five yellow flowers, and peculiar little prickly seedpods twisted into a flat coil.

Melilot, *Melilotus indica*, has slender, many-flowered racemes, narrow or oblong leaflets, and tiny oval or roundish seedpods.

The cultivated clovers, *Trifolium*, and alfalfa, are occasionally seen on roadsides, but are less common in the peninsula than they are farther north.

INDIGO (Genus *Indigofera*)

A tall wild indigo, *I. caroliniana*, with many slender branches, delicate pinnate leaves of small leaflets about one-half inch long, and narrow racemes of pale reddish flowers one-fourth of an inch in length, is common in high pine-lands, and, like many other plants of similar location, has an extremely long root. The flowers show an interesting explosive mechanism, and when the pollen is ready to be scattered, a light touch will release the horizontal wings and the keel, which suddenly separate and spring backward while the cluster of stamens is shot upward.

Besides native herbaceous plants of this genus we have two introduced species of shrubby growth, *I. tinctoria* and *I. Anil*, which escaped from cultivation when indigo was one of the products of the South.

Indigofera caroliniana. Flowers reddish or yellowish brown, small, in axillary racemes. Seedpods drooping, small. Stems 3-6 ft. tall. Leaflets 9-15, small, oblong or oval. Dry pinelands. Blooming in spring and summer. Fla. to N. C.

Indigofera leptosepala. Flowers pale scarlet. Seedpods 1 in. long. Stems 1-3 ft. long, spreading on ground. Leaflets 7-9. Dry soil. Fla. to Ga., Texas, and Kan.

Indigofera tinctoria. Flowers small, reddish or purplish. Pods 1 in. long. Shrubby, 3-6 ft. tall. Leaflets 7-11. Waste places. Blooming in summer. Fla. to N. C. and La.

Indigofera Anil. Flowers small, reddish brown. Pods curved, $\frac{1}{2}$ in. long. Shrubby, 3-6 ft. tall. Leaflets 7-15. Waste places. Blooming in summer. Fla. to N. C. and La.

SAND PEA. GOAT'S RUE (Genus *Cracca* (*Tephrosia*))

Our most common plants of this genus grow with somewhat zigzag prostrate stems in dry soil, and from early spring to fall bear, opposite the leaves, stalked racemes of small flowers, about half an inch long, that usually open about noon. At that time they are white, by sunset they have changed to pale pink, and the following day are crimson.

C. ambigua, common in dry pinelands, has angled stems, long, erect leaves of 7-17 narrow leaflets that often are several inches in length, and narrow seedpods from one to two inches long.

C. spicata has leaves of 9-15 oblong or oval leaflets, one-half to one inch long, which are covered with silky brownish hairs, and are often reflexed.

C. chrysophylla, whose stems are often partly buried in the sand, has short leaves of 3-7 oval or wedge-shaped leaflets that are shining above and are densely hairy beneath. The flowers are often a bright pink and change to crimson.

C. virginiana, devil's shoe-strings, is less common in the peninsula than the above species. It is erect, one to two feet tall, with leaves of 13-25 leaflets, and bears terminal racemes of many yellowish white flowers, tinged with purple.

COFFEE-WEED (Genus *Glottidium*)

This tall annual weed, which blooms in summer, is especially noticeable in early winter, when its thicket-like growth of dry stems is conspicuously decked with seedpods, whose peculiar appearance is due to the fact that when the brown outer walls of the pod open, the two seeds, instead of falling, are held within a parchment-like envelope of lighter color.

***Glottidium vesicarium*.** Flowers yellow, small, in axillary racemes. Pods oblong, 2-3 in. long. Stems 3-15 ft. tall. Leaflets 20-52, oblong, about 1 in. long. Damp soil. Blooming in summer. Fla. to N. C. and Texas.

***Glottidium vesicarium atrorubrum*.** Flowers blackish purple. Plants otherwise similar to above species. Fla.

***Sesbania macrocarpa* (Sesban).** Long-pod. Flowers yellow, dotted with purple, about 1 in. long, few, in axillary racemes. Pods narrow, 6-12 in. long. Stems 3-12 ft. tall. Leaflets 20-70, 1 in. long or less. Annual. Moist soil. Blooming from spring to fall. Fla. to Pa., Texas, and Mo.

***Sesbania punicea* (Daubentonia).** This showy exotic shrub or small tree, with leaves of 16-28 dark green oblong leaflets, and drooping racemes of handsome scarlet flowers, has become naturalized in several places in Florida. The seedpods, 3-4 inches long, are four-winged.

MILK VETCH (Genus *Tium* (*Astragalus*))

Lying close to the sand, with many spreading stems six to twenty inches long, the gray-green mats of this delicate pea are often seen in pinelands in the interior of the peninsula. The pale coloring of the whole plant is very attractive. The pinnate leaves are of 13-25 tiny heart-shaped leaflets, only one-eighth to one-fourth of an inch long. The small, pale purple flowers are in axillary, stalked racemes, and are followed by crescent-shaped seedpods about an inch in length. The blossoming season begins in late winter, and the stems die in early summer.

PSORALEA (Genus *Psoralea*)

The most common of this genus is *P. canescens*, a widely branched plant of nearly globular form, with soft three-foliate leaves, and short clusters of blue or purplish flowers which change to green. In habit of growth the plant resembles a *Baptisia*.

Though of similar bushy growth, *P. Lupinellus* is very different in appearance as the leaves seem to be formed of five or seven green threads clustered at the top of the leaf-stalk. Both are found in sandy pinelands.

A western species, *P. esculentus*, the prairie apple, or *pomme blanche*, has edible roots, which were used as food by the Indians.

Psoralea canescens. Flowers blue or purplish, small, in short axillary racemes. Pod oval, short. Stems 1-3 ft. tall, branched. Leaflets 3, or upper leaves 1-foliate, glandular, broadened upward, $\frac{1}{2}$ -2 in. long. Sandy soil. Blooming in spring and summer. Fla. to Ala. and N. C.

Psoralea Lupinellus. Flowers blue, small, in long-stalked axillary racemes. Pods short, curved, wrinkled. Plants bushy, 1-2 ft. tall. Leaflets 5 or 7, thread-like, 1-3 in. long. Dry pinelands. Blooming in spring and summer. Fla. to N. C.

LEAD PLANT. POLECAT TREE. FALSE INDIGO (Genus *Amorpha*)

The disagreeably scented leaves of this shrub, locally known in Florida as polecat tree, appear in late winter and are soon followed by dense racemes of tiny blackish purple flowers, whose rich and unusual color is emphasized by the yellow anthers. The flowers are of odd form, as there is but one petal, the standard, which is folded about the stamens. This shrub is very ornamental, and is sometimes cultivated. An inferior dye was formerly made from the young shoots.

Amorpha fruticosa. Flowers dark purple, small, many, in solitary or clustered spike-like racemes 3-6 in. long. Pod small, curved, glandular. Shrub 4-20 ft. tall. Leaflets 11-33, oblong or elliptic, about 1 in. long. Variable. Damp places. Blooming in spring and summer. Fla. to Texas, Pa., and Minn.

Parosela domingensis. Flowers white to purple, small, in cylindrical spikes about 1 in. long. Keel longer than other petals. Calyx silky. Pod tiny. Stems 2-8 ft. tall, branched. Leaflets 11-15, small, velvety, and slightly aromatic. Dry soil. Blooming all the year. Fla. and Texas.

PRAIRIE CLOVER and KUHNISTERA (Genera *Petalostemum* and *Kuhnistera*)

The pretty prairie clovers, *Petalostemum*, are at home on dry pine barrens, where the clustered stems, with many finely cut leaves, bear pink, lavender, or white clover-like heads, which have a faint and agreeable fragrance.

Closely related to the prairie clovers is the fall-blooming white kuhnistera, whose ripening heads of soft gray and brown are conspicuous in pinelands in early winter. This member of the pea family is remarkable in that each head of flowers is surrounded by an involucre of bracts, as are the flowering-heads of the composite family.

Flowers of these two genera differ from the usual form in this family, as the wing and keel petals are nearly alike, and the slender claws of these four petals are united in a tube with the stamens, of which there are but five. The standard, which is broader than the other petals, is separate. The seedpods are very small.

Petalostemum Feayi (Petalostemon). Flowers pink or bright lavender, small, in dense globose spikes about $\frac{1}{2}$ in. long. Stems tufted, 10-20 in. tall. Leaflets 3-9, short, very narrow. Dry sand. Blooming in spring and summer. Fla.

Petalostemum carneum. Taller and less tufted than above species. Spikes cylindrical, 1 in. long or more. Fla. and Ga.

Petalostemum albidum. Flowers white. Stems 2-3 ft. tall. Fla. and Ga.

Kuhnistera pinnata. Flowers white, small, in many short, headlike spikes in a somewhat flat-topped inflorescence. Stems tufted, 1-4 ft. tall, branched. Leaflets 3-15, short, very narrow. Dry pinelands. Blooming in fall. Fla. to N. C. and Miss.

CHAPMAN'S PEA (Genus *Chapmania*)

This interesting plant of upright growth is common in dry soil, beginning to bloom in late winter, and bearing fragile yellow flowers along the leafless upper part of the stem, which is sticky with gland-tipped hairs on which small insects are caught. The flowers open early in the morning, but close before ten o'clock when the weather is warm. The somewhat similar wings and standard spread widely and give the flowers a three-petaled appearance, as the keel is small. Besides these showy flowers, which form no seeds, there are inconspicuous fertile flowers without petals.

The seedpods of this and the five following genera differ from those of our other peas as they are formed of joints that separate readily from one another.

The generic name of this plant honors Dr. Alvan Wentworth Chapman, whose admirable "Flora of the Southern United States" was for many years the standard manual of southern wild flowers.

Chapmania floridana. Flowers yellow, about $\frac{3}{4}$ in. across, in terminal racemes. Pod jointed, roundish, $\frac{3}{4}$ in. long. Stems 1-3 ft. tall, wandlike. Leaflets 5 or 7, narrowly oblong, $\frac{1}{2}$ -1 in. long. Dry soil. Blooming from late winter to midsummer. Fla.

Aeschynomene viscidula. Joint vetch. Flowers small, pale yellow, with dark spot on standard, few, in axillary racemes. Pods 2-3-jointed. Stems prostrate, 1-3 ft. long, sticky. Leaves about 1 in. long, of 5-9 small leaflets. Sandy soil. Blooming from spring to fall. Fla. to Ga. and Miss.

Aeschynomene virginica. Joint vetch. Erect. Flowers reddish yellow, small. Pods of 5-10 joints. Leaflets 27-53. Sandy soil. Blooming from spring to fall. Fla. to N. C. and La.

Zornia bracteata. The flowering-spikes of this pea are oddly beaded with green bracts, which partly conceal the small yellow flowers and bristly, 2-5-jointed seedpods. The slender stems, 1-2 ft. long, spread on the ground in dry places in summer, and bear singular leaves of four narrow or oval spreading leaflets.

Stylosanthes biflora. Flowers yellow, small, few, in terminal spikes. Pod small, 1-2-jointed. Stems wiry, 6-20 in. tall. Leaflets 3, elliptic or linear, pointed, strongly veined, about 1 in. long. Dry soil. Blooming in spring and summer. Fla. to N. Y., Texas, and Kan.

BEGGARWEED. TICK TREFOIL (Genus *Desmodium*
(*Meibomia*))

By their annoying seedpods beggarweeds are recognized, for the plants would seldom attract attention were it not for the fruit of several flat, easily separable joints covered with hooked hairs, which cling to the clothing of passers-by.

The leaves of our common species are three-foliolate, or rarely one-foliolate, and the small pink or purplish flowers are in loosely-flowered racemes. The plants are common in dry pinelands and on roadsides. *D. rhombifolium* has broad leaflets, two to three inches long. *D. strictum* has narrow leaflets, one to two inches long. Both are erect, with long terminal racemes. Of the trailing beggarweeds *D. triflorum*, the smallest, is common in many places, covering the ground with little clover-like leaves, and bearing a few tiny flowers in the leaf-axils.

BUSH CLOVER (Genus *Lespedeza*)

Plants of this genus, whose name records that of the Spanish governor of Florida in the time of the botanist Michaux, are related to the beggarweeds, but differ from

them in their shorter seedpods of one, or rarely two joints, and in their short, dense spikes of white or purple flowers. *L. hirta*, two to four feet tall, has three-foliate leaves of oval or roundish leaflets, and small yellowish white flowers. It is common in dry pinelands, where it blooms in summer and autumn.

DOLICHOLUS (Genus *Dolicholus* (*Rynchosia*))

Several peas of this genus are common in dry soil. The small yellow flowers, the somewhat two-lipped calyx, with the three lower lobes narrowly pointed and longer than the two upper lobes, the resinous-dotted pubescent leaves of one or three broad leaflets, and the short, flat seedpods containing one or two brown or mottled seeds, are characteristics by which this genus may be identified.

D. minimus, with three-foliate leaves in which the terminal one is larger and broader than the oblique lateral leaflets, is a slender vine that spreads its abundant growth over grasses and low shrubs. Dollar-weed, *D. simplicifolius*, a small, erect plant, with one-foliate, orbicular, softly hairy leaves, which are one to two inches long, and are usually broader than long, bears sessile or short-stalked axillary racemes near the summit of the stem. *D. mollissimus*, also an erect plant, has elongated terminal racemes, and three-foliate leaves. *D. Michauxii*, prostrate and twining, often has both one-foliate and three-foliate leaves, the latter being near the tips of the stems, and the calyx is longer than the small flower.

CHEROKEE BEAN. CORAL PLANT (Genus *Erythrina*)

The beautiful coral tree of India which, according to legend, bloomed in the gardens of heaven until it was stolen by Krishna, when it was therefore banished and condemned to grow on earth, has a striking relative among our native plants—the brilliant Cherokee bean, whose red flowers

flame from thickets, or rise among low palmettos, during late winter and spring.

The elongated racemes of long, narrow flowers often bloom before the leaves appear. The cylindrical calyx is red, also, and almost conceals the small wings and keel. The seedpods, which are constricted between the seeds, open in autumn and display bright scarlet beans. Several ornamental exotic species of this genus are planted in southern Florida.

Erythrina herbacea. Flowers red, narrow, nearly 2 in. long, in racemes 1-2 ft. long. Stems 2-6 ft. tall, usually prickly. Leaves long-stalked, leaflets 3, triangular, 1-3 in. long. Sandy soil. Blooming from late winter to summer. Fla. to N. C. and Texas.

Erythrina arborea. Flowers similar to above species. Shrub or small tree, 10-20 ft. tall. Southern Fla.

MILK PEA. GALACTIA (Genus *Galactia*)

Our common species of galactia are prostrate or climbing plants of sandy soil, which bloom from early spring to fall in axillary raceme-like panicles of small white, rose, or purple flowers. The two upper lobes of the calyx are united, making the calyx four-lobed, and the lowest lobe is longer than the others.

G. Elliottii, one of the most common, bears white flowers, often tinged with red, not quite half an inch long, and has leaves of seven or nine leaflets, which are smooth above and pubescent beneath. The seedpods, nearly two inches long, are woolly. This pea often forms a thick carpet on the ground, or covers shrubs with its twining growth.

Our other galactias have three-foliate leaves. *G. floridana*, a pubescent, prostrate plant that does not twine, has many rose-purple flowers, and very woolly seedpods about two inches long. *G. regularis*, with twining stems, is smooth or slightly pubescent. The flowering-stalks are

not longer than the leaves, and the seedpods, about one inch long, are nearly smooth at maturity. The prostrate or twining *G. mollis* has hairy foliage and seedpods, and bears bright rose-purple flowers at the top of the flowering-stalks, which are longer than the leaves.

BUTTERFLY PEAS (Genera *Clitoria* and *Bradburya*)

The largest of our butterfly peas, *Clitoria mariana*, is common in dry soil in many localities. The long standard is curved outward, displaying narrow lines of magenta and a blotch of pale yellow that mark its delicately colored wide expanse. The exotic *C. Ternatea*, with blue flowers, and five-foliate leaves, is an attractive vine that sometimes escapes from cultivation.

The spurred butterfly peas, *Bradburya*, are easily distinguished from the former, as the flowers are shorter and more round in form, and on the back of the standard, near the base, show a short, blunt spur.

***Clitoria mariana*.** Flowers lilac or pale blue, 2 in. long, solitary or few from leaf-axils. Pods about 1 in. long. Stems 1-4 ft. long, erect or twining. Leaflets 3, 1-2 in. long. Dry soil. Blooming in spring and summer. Fla. to N. Y., Texas, and Mo.

***Bradburya arenicola* (*Centrosema*).** Flowers lilac or pale blue, about 1 in. long, standard usually broader than long. Upper calyx lobes shorter than lower. Pods narrow, 3-5 in. long. Twining vine, leaflets 3, broadest near base, 1-2 in. long. Dry soil. Blooming from spring to fall. Fla.

***Bradburya virginica*.** Flowers similar to above species. Calyx lobes nearly equal in length. Leaflets more nearly oblong or linear. Sandy soil. Fla. to N. J., Texas, and Ark.

GROUNDNUT (*Apios tuberosa*)

This attractive twining vine, found in thickets from Florida northward, has leaves of five or seven leaflets, and

bears stalked racemes of many fragrant brown and maroon flowers, about half an inch long, of peculiar form, as the velvet-like standard is broad and reflexed, and the keel is curved inward and is spirally twisted. The roots bear small edible tubers. Seeds are more frequently found on this vine in Florida than in northern states, where they often fail to mature.

WILD BEAN (*Phaseolus sinuatus*)

Flowers of this genus, like those of *Apios*, differ from our others of this family in having a spirally twisted keel. The long, slender stems of this bean trail on the ground in dry pinelands, and bear attractive dark green leaves of three small, triangular, three-lobed leaflets, often blotched with lighter color, and small pink or purple flowers in long-stalked axillary racemes. The curved seedpods are an inch and a half long. Garden beans of various types belong to this genus.

WILD PEA (*Vigna repens*)

In low grounds near the coast, and inland for several miles along the banks of streams in southern Florida, one of the common peas is *Vigna repens*, a vine with three-foliate leaves, yellow flowers, about one-half inch long, clustered at the top of long, axillary flower-stalks, and roundish, hairy seedpods one to two inches in length. The leaflets are very variable in size and shape, and the vines sometimes lie in tangled masses on the ground, and sometimes climb high on shrubs and trees.

The cultivated cow-pea is of this genus.

BEACH BEAN (*Canavalia obtusifolia*)

This plant stretches stout stems along the beaches of southern Florida, where its heavy seedpods, four to six

inches long and about an inch broad, are noticeable on the sands, as are the large leathery leaves of three roundish leaflets. Racemes of rose-colored flowers are borne on stout stalks from the leaf-axils.

WILD PEA. VETCH (*Vicia acutifolia*)

Our common pea of this genus is easily identified by the delicate tendrils that terminate the pinnate leaves. The slender stems, with leaves of two, four, or six narrow leaflets, and long-stalked axillary racemes of small pale blue flowers, climb on grasses and other plants of sandy soil, and also invade cultivated land. It blooms chiefly from spring to fall, but its flowers are often seen in winter in southern Florida.

Sweet peas and garden peas are closely related to this genus, and the cultivated crab's-eye vine, *Abrus precatorius*, with dark green pinnate leaves, and bright red seeds capped with black at one end, is allied to it, though the leaves lack tendrils. The seeds of the crab's-eye vine have long been used in India as a standard of weight (that of the Kohinoor diamond being thus ascertained), and also for Buddhists' rosaries.

GERANIUM FAMILY (*Geraniaceae*)

Geranium carolinianum. Wild geranium. Crane's-bill. Flowers pale pink, small, in stalked, axillary clusters. Sepals 5, petals 5, stamens 10. Capsules long-beaked. Stems 8-20 in. long, erect or spreading, hairy. Leaves roundish, 1-3 in. wide, deeply cleft and toothed, long-stalked. Dry soil and waste places. Blooming in spring and summer. Fla. to New England and westward.

FLAX FAMILY (*Linaceae*)

Cathartolinum Curtissii (Linum). Yellow flax. Flowers yellow, small, scattered along slender upper branches. Sepals

5, petals 5, stamens 5, sensitive. Capsule tiny, roundish. Stems slender, 1-2 ft. tall. Leaves chiefly alternate, narrow, short, erect. Low grounds. Blooming from midwinter to fall. Fla.

WOOD-SORREL FAMILY (*Oxalidaceae*)

Our species of wood-sorrel are found chiefly on roadsides and in waste grounds. They are low plants, with acid juice, small three-foliate leaves, and small yellow flowers of five sepals, five petals, and ten stamens, five of which are shorter than the others.

Oxalis stricta, a common weed, has fruiting-pedicels that are sharply bent down, so that the top of the flowering-stem, the pedicel, and the erect capsule form a capital N. The pedicels are minutely hairy with appressed hairs. *O. corniculata* has ascending fruiting pedicels, which are hairy with spreading hairs.

MALPIGHIA FAMILY (*Malpighiaceae*)

Byrsonima lucida. Locust-berry. Evergreen shrub or tree. Leaves opposite, entire, short-stalked, leathery, shining, broadened upward, about 1 in. long. Flowers white, changing to yellow and rose, in short terminal racemes. Sepals 5, petals 5, less than $\frac{1}{2}$ in. long, broadly fan-shaped, on slender claws, stamens 10, united below. Fruit a small drupe. Sandy soil. Blooming in spring and summer. Southern peninsula Fla.

RUE FAMILY (*Rutaceae*)

Trees. Leaves alternate, aromatic, of several or many leaflets. Flowers minute, in panicles.

This family, to which the citrus trees and the white sapote (*Casimiroa*) belong, is represented in the native flora of the peninsula chiefly by the prickly ash and the

wild lime of the genus *Zanthoxylum* (*Fagara*), and the torchwood, *Amyris*, trees and shrubs of the coastal region which contain a bitter aromatic oil.

Young trees of the southern prickly ash, *Z. clava-Herculis*, are copiously armed with stout spines. Older trees gradually lose their spines, but retain peculiar corky protuberences on the trunks. The leaves are of 7-13 glossy, pointed leaflets, one to two inches long, which are dotted with minute pellucid spots and, with the exception of the terminal leaflet, are unsymmetrical in shape. The minute greenish flowers, of five sepals, five petals, and five stamens, are in terminal panicles. The names pepper tree and sting-tongue refer to the flavor of the bark, which is sometimes dried and chewed as a remedy. Toothache-tree and Hercules' club are other common names. The small oblong capsules contain one or two seeds.

The wild lime, *Z. Fagara*, has 5-13 broad leathery leaflets, less than an inch long, which are rounded or notched at the apex. The branches are zigzag, and are armed with recurved spines. The very small flowers are borne in axillary clusters. The sepals, petals, and stamens are four each, but stamens and pistils are in separate flowers. The bark and leaves have been used medicinally, and also as a flavoring.

The torchwood, *Amyris elemifera*, is a small evergreen tree, with leaves of one or three shining leaflets, one to three inches long, which have many pellucid dots. The minute whitish flowers are in panicles, and have four sepals, four petals, and eight stamens. The globular black fruit, barely one-fourth of an inch in diameter, is very aromatic.

SURIANA FAMILY (*Surianaceae*)

Suriana maritima. Bay-cedar. Shrub 3-10 ft. tall, much branched. Leaves alternate, entire, crowded at ends of



FIG. 16. Yellow Milkwort (Thimbles)
Polygala Rugelii

branches, linear or broadened upward, thickish, more or less pubescent, about 1 in. long. Flowers yellow, about $\frac{1}{2}$ in. across, in small clusters. Sepals 5, petals 5, stamens 10, the alternate ones shorter and sterile, filaments pubescent. Fruit of 4 or 5 small achene-like pubescent carpels seated in persistent calyx. Sea beaches. Blooming all the year. Southern Fla.

TORCHWOOD FAMILY (*Burseraceae*)

GUMBO-LIMBO. WEST INDIAN BIRCH (*Elaphrium simaruba* (*Bursera*)).

Great burnished reddish brown trunks of the tropical gumbo-limbo trees are conspicuous in hammocks near the coast of southern Florida. The smooth bark is remarkable as it can be peeled off in thin sheets, like that of some of the birches. This tree is the source of an aromatic gum that in tropical America has long been used in medicine, and also as a glue and a varnish. The name gumbo-limbo is said to be a corruption of *goma elemi*, a Spanish name of the gum.

The leaves are alternate, of 3-9 entire, pointed leaflets, 1-4 inches long. The minute greenish or whitish flowers are in axillary racemes or panicles, and are even less noticeable than the small aromatic fruit, barely one-fourth of an inch long, whose valves split and fall, often leaving the three-angled seed on the tree.

The closely-allied paradise tree, or bitter-wood, *Simaruba glauca* of the quassia family, is another tropical tree found in the southern part of the peninsula. It has long, pinnate leaves of 6-18 glossy leaflets, 2-3 inches in length, and long panicles of small greenish flowers. The red or dark purple pulpy fruit is oval in shape, and is about three-fourths of an inch long.

MILKWORT FAMILY (*Polygalaceae*)

Herbaceous plants. Flowers tiny, very irregular. Fruit a capsule.

MILKWORT. THIMBLES. POLYGALA (Genus *Polygala*)

The genus to which these plants belong is one of the most industrious in Florida. November and December show belated flowers, and January begins the season anew. Even in midwinter it is not uncommon to find half a dozen different species blossoming in yellow, orange, purple, and greenish white.

For such closely related plants the species differ widely in general appearance; some show a branched inflorescence of many small racemes, others crowd their flowers in solitary thimble-like heads, and still others scatter them along slender stems. But, in spite of this diversity, the minute flowers are all formed on the same plan, and it is well to examine one closely in order that plants of this genus may be the more readily identified. Of the five sepals three are minute, the other two are larger, and are petal-like in color, and in some species remain on the plant and increase in size as the seeds ripen. There are but three petals; these are small and are partly united, so that they appear as a short tube ending in minute lobes, or a very short fringe. The eight stamens are more or less united to one another and to the petals. The seeds, also, are peculiar: each capsule contains two, and each seed is capped with a bit of white spongy tissue called the caruncle. This caruncle is of different shape in the different species; in some it almost envelops the seed, and in others it merely covers one end. The pistils, also, show a diversity of form.

Why such closely related plants should have developed these many small differences during the long course of evolution is—to borrow an expression from Darwin—one



FIG. 17. Orange Milkwort and Pipewort
Polygala lutea and *Syngonanthus flavidulus*

of the "abominable mysteries" of the plant world. It was formerly held that each difference, however slight, was of some special service to the plant, but the present opinion is that many such peculiarities are of no use whatever, but are due to slight variations which, not being harmful, have been perpetuated.

The most noticeable polygalas during winter and early spring are those that Floridians call "thimbles" and "bachelors' buttons," *P. Rugelii* which blooms in clear yellow, and the lower *P. lutea* with orange colored flowers. These polygalas, whose tiny flowers are densely crowded in thimble-like heads at the tips of the stems, are common in low pinelands and borders of marshes. The dwarf milkwort, *P. nana*, found in similar locations, has the appearance of endeavoring, with some success, to pull itself back into the earth from which it sprang. Very low it is, and with a greenish tinge in its pale yellow flowering-heads, which are close to their rosette of basal leaves.

In early spring the fragrant, tall *P. cymosa* begins to lift its flat-topped, branched inflorescence above the dry marsh grasses that grew rankly during the rainy season of the previous summer. Similar to this is the lower *P. ramosa*, which shows the same preference for wet places, but is seldom a foot in height, and occasionally blooms in winter. Another of this group, *P. Baldwinii*, which blossoms in white, is locally abundant on low prairies, as is the similar *P. Carteri* of southern Florida, whose pointed racemes are greenish. The roots of the species mentioned above have a spicy fragrance that is suggestive of wintergreen.

P. grandiflora, often seen in dooryards, differs from the above in bearing rose-colored flowers, about a quarter of an inch long, scattered along slender stems. The bright sepals enlarge and change to green as the seeds ripen, and loosely enfold the capsule. In *P. polygama* the rose-col-

ored flowers are somewhat smaller, the racemes are more closely flowered, the plants are smooth instead of minutely hairy, and late in the season bear many cleistogamous flowers in subterranean racemes.

The name milkwort records an old belief that animals feeding on these plants yielded an increased supply of milk. Several species have been used in medical practice, and are also among the many plants that have won unmerited fame as remedies for snake-bites.

FLOWERS IN SHORT, COMPACT HEADS

Polygala Rugelii. Flowers bright yellow, heads somewhat globose, about 1 in. long. Plants 1-2 ft. tall. Leaves alternate, entire, 1-2 in. long, upper leaves shorter. Pinelands. Blooming chiefly in spring and summer. Fla.

Polygala lutea. Flowers orange-yellow. Heads oblong, generally 1-2 in. long. Plants 4-15 in. tall. Low pinelands. Blooming all the year. Fla. to N. Y. and Miss.

Polygala nana. Flowers greenish yellow. Heads 1-2 in. long. Plants 1-5 in. tall. Pinelands. Fla. to S. C. and La.

Polygala cruciata. Flowers rose-purple or tinged with green. Heads oblong or oval, about 1 in. long. Plants 4-16 in. tall. Leaves narrow, in whorls of 4. Marshy places. Blooming in spring and summer. Fla. to La. and northward.

Polygala incarnata. Flowers purple or pink. Heads small, cylindrical. Petal-tube longer than sepals. Plants 6-30 in. tall, seldom branched. Leaves alternate, scalelike or short. Sandy soil. Blooming all the year. Fla. to Pa., Ark., and Wis.

Polygala setacea. Flowers greenish white, minute. Heads small, pointed, narrow. Plants 4-20 in. tall, very slender. Leaves minute, scalelike. Pinelands. Blooming all the year. Fla. to N. C.



FIG. 18. Tall Yellow Milkwort and Whitetop Sedge
Polygala cymosa and *Dichromena latifolia*

FLOWERS IN BRANCHED, FLAT-TOPPED INFLORESCENCE

Polygala cymosa. Flowers yellow, many. Plants 2-4 ft. tall. Leaves chiefly basal, narrow, 4-10 in. long. Upper leaves short, few. Wet places. Blooming in spring and summer. Fla. to Del. and La.

Polygala ramosa. Flowers yellow. Plants 5-20 in. tall. Leaves 1 in. long or less, basal leaves broadened upward. Low grounds. Blooming from midwinter to fall. Fla. to Del. and Texas.

Polygala Baldwinii. Flowers white or greenish white. Plants 6-24 in. tall. Leaves 1 in. long or less, broadened upward. Low grounds. Blooming all the year. Fla. to Ga. and Miss.

FLOWERS IN NARROW RACEMES

Polygala grandiflora. Flowers pink or rose-purple, racemes loosely flowered. Plants 6-20 in. tall. Leaves alternate, oval or narrow, minutely hairy, about 1 in. long. Dry soil. Blooming all the year. Fla. to S. C. and Miss.

Polygala polygama. Flowers purple or rose. Stems many, 4-20 in. tall. Leaves short, smooth, oblong or narrow. Many capsules are borne on horizontal subterranean stems. Dry soil. Blooming chiefly from spring to fall. Fla. to Nova Scotia and Texas.

Polygala Boykinii. Flowers white. Plants slender, 10-24 in. tall. Leaves in whorls of 4 or 5, 1 in. long or less. In calcareous soil. Blooming in spring and summer. Fla. to Ga. and La.

SPURGE FAMILY (*Euphorbiaceae*)

This family is noted for ornamental foliage, and for peculiar forms, but seldom for its flowers, which usually are inconspicuous, and often lack both calyx and corolla.

Our common native species are not noticeable, but our cultivated plants include ornamental crotons, of the genus *Codiaeum*, acalyphas with richly variegated leaves, the

poinsettias, a *phyllanthus* whose delicate foliage ranges from white and green to pink and brown, and several plants of peculiar cactus-like form. The castor oil plant or palma Christi, *Ricinus communis*, becomes a small tree in Florida, and often escapes from cultivation. Cassava is noted for its thick roots from which tapioca is made. Seeds of the recently introduced tung-oil trees, *Aleurites*, yield oils used in varnishes and other products.

Edible fruits and roots, medicines, poisons, oils, and rubber are obtained from this large and varied family. The sap is milky in many species. The minute flowers are extremely varied in form. The capsule is usually three-lobed and three-celled, and contains three or six seeds, which are capped at one end by a small protuberance called the caruncle.

OIL-WEED. NETTLE-CURE. HEALING CROTON. CANCER-WEED (Genus *Croton*)

Among our small native crotons is one whose unusual properties have won for it a variety of names. The branching plants, of yellowish or brownish green, are locally common in dry soil, and are remarkable in being covered, especially on the lower surface of the leaves, with silvery stellate scales, which are interesting and beautiful when seen through a magnifying glass.

The sap is a country remedy for cuts and scratches. For this purpose the stems are broken and the sap is allowed to drip on the cut, where it forms a thin, tenacious coating.

***Croton argyranthemus*.** Flowers minute, whitish, in cylindrical terminal racemes 1-2 in. long. Plants 1-2 ft. tall. Leaves alternate, entire, stalked, oval or oblong, 1-2 in. long. Dry soil. Blooming all the year. Fla. and Ga. to Texas.

SPURGE NETTLE. TREAD SOFTLY (Genus *Cnidoscolus*)

It is sometimes said—and believed—on the Florida sandhills that, “if you look right hard at this nettle before you touch it, it won’t sting.” Those who are curious may experiment, but those who are cautious will avoid the plant, for it is armed with stinging hairs which act as hypodermic needles, piercing the flesh and injecting an irritant poison.

The plants are usually low in growth, with leaves of various forms, and small white flowers whose showy part is the corolla-like calyx of the staminate blossoms. They are, as Dr. Alphonso Wood remarked in his admirable “Flora”—“painfully common.” The thick root, buried deep in the earth, is said to be edible when cooked.

Cnidoscolus stimulosus (Jatropha). Flowers 5-lobed, about $\frac{1}{2}$ in. across. Plants 4 in. to 4 ft. tall. Leaves roundish, 3-5-lobed, stalked, 2-9 in. long. Whole plant bristly with stinging hairs. Dry soil. Blooming all the year. Fla. to Va. and Texas.

QUEEN’S DELIGHT. QUEEN’S-ROOT (Genus *Stillingia*)

The common names of these plants can scarcely be due to aesthetic delight, for the plants are not attractive. Certain species, however, have been used as “blood purifiers,” and also as a black dye. Three short stout prongs under each capsule are characteristic of this genus.

Stillingia spathulata. Flowers small, yellowish green, in somewhat thick terminal spikes 2-5 in. long. Capsules $\frac{1}{3}$ in. across. Plants 10-30 in. tall, stout, somewhat branched. Leaves alternate, variable, generally narrowly elliptic, shallowly toothed, 2-6 in. long. Pinelands. Blooming chiefly from spring to fall. Fla. to Ga. and Ala.

Stillingia aquatica. Shrubby, 2-6 ft. tall, branched near top. Leaves narrow, finely toothed, 2-6 in. long. Spikes yellowish. Chiefly in shallow water. Blooming all the year. Fla. to S. C. and Ala.

HYPOCRITE. WILD POINSETTIA (Genus *Poinsettia*)

The cultivated poinsettia, which ornaments Florida gardens, has among our wild flowers two humble relatives known by the amusing name of hypocrite, a name that may possibly be due to the fact that the flowers are inconspicuous, and bright color is shown only in the leaf-like bracts surrounding them. The cultivated poinsettia bears small green flowers in terminal clusters encircled by flaming bracts, and the wild poinsettias show the same characteristics on a reduced scale. These hypocrites are not uncommon on roadsides leading out from towns of southern Florida, and are occasionally seen in other parts of the state. The two wild species are readily distinguished by their leaves, as those of *P. havanensis* are long and narrow, and those of *P. heterophylla* are oblong, or fiddle-shaped, or roundish, in various forms.

WEEDS

Several small euphorbias are common weeds of cultivated and waste grounds. These are of spreading growth, and have a milky sap, small leaves, inconspicuous flowers, and tiny capsules. Like the poinsettias, the flowers are in clusters in small cup-shaped involucre, whose borders, in some species, have small petal-like appendages. *Euphorbia brasiliensis* has wiry reddish stems, smooth, oblong, dark green opposite leaves, and tiny flower-clusters in the leaf-axils. *E. pilulifera* has pubescent reddish leaves, and dense flower-clusters that are short-stalked or almost sessile in the leaf-axils. *E. polyphylla*, more often seen in pinelands, has very numerous narrow, gray-green leaves, less than an inch long, and terminal clusters of flowers whose involucre is bordered by white or pink appendages that have the appearance of tiny petals.

Tragia linearifolia has narrow alternate leaves, minute flowers in slender racemes, and hairy reddish capsules.



FIG. 19. Tread-Softly
Cnidoscolus stimulosus

Phyllanthus platylepis, whose short branches with small oval leaves resemble pinnate leaves, has become a common weed in citrus groves. The leaves are not actually pinnate, as the apparent leaflets are small alternate leaves, and the branches are beaded with tiny drooping green flowers and capsules from the leaf-axils.

CROWBERRY FAMILY (*Empetraceae*)

Heath-like evergreen shrub with needle-like leaves.

ROSEMARY (*Ceratiola ericoides*)

On the wide stretches of Florida's driest pine barrens this rosemary forms densely branched evergreen shrubs, several feet in height and in diameter, which under a hot sun give out an aromatic fragrance.

To the careless observer the needle-like leaves, barely half an inch long, might suggest relationship with the firs, but this shrub is very far from being allied to the conifers.

The leaves, and the branches also, are in whorls, and the margins of the leaves are so strongly rolled backward that the leaves are almost tubular. Minute reddish flowers, with two bracts, two fringed sepals, two petals, and two stamens, are sessile in the leaf-axils, and are followed by small, yellowish, two-seeded drupes.

CASHEW FAMILY (*Anacardiaceae*)

Shrubs and trees. Leaves alternate, of 3 or more leaflets. Flowers minute, greenish. Fruit a drupe.

This family, like many others, is remarkable for the widely different qualities of its members. The mango, which has been called the most delicious fruit in the world, is cousin to the notorious poison ivy, as well as to

the beautiful pepper tree, *Schinus Molle*, planted in California, and the Brazilian pepper tree, *Schinus terebinthifolius*, occasionally planted in Florida. Others that have long been in cultivation are the pistachio, cashew, spondias, and cotinus, or smoke-tree.

The most abundant species in the native flora is a sumac, *Rhus copallina*, which usually grows as a shrub three to ten feet high. It is found in dry soil throughout the greater part of Florida, and may be identified by its glossy leaves of nine to twenty-one pointed leaflets borne along a broadly winged rachis, and by its pyramidal clusters of small red drupes. The tiny greenish flowers, of five sepals and five petals, are in dense terminal panicles.

The poison ivy, *Rhus Toxicodendron*, a climbing shrub with three-foliate leaves, axillary greenish flowers, and whitish drupes, is less common in the Florida peninsula than it is in many of the northern states.

The coral sumac, or poisonwood, *Metopium toxiferum*, a tree with extremely irritating sap, has leaves of three to seven stalked leaflets, one to four inches long, few-flowered axillary panicles of small greenish flowers, and orange or scarlet drupes about one-half inch long. It is found on the Keys and in the southern part of the peninsula.

HOLLY FAMILY (*Aquifoliaceae*)

Trees or shrubs. Leaves alternate. Flowers white, small, from leaf-axils. Fruit a red or black drupe.

HOLLIES (Genus *Ilex*)

One of the most common hollies in Florida, *Ilex glabra*, is known as gallberry, from the bitterness of its fruit. Inkberry the shrub is also called, as the "berries," which remain on the bushes all winter, are inky black. This holly often forms low thickets, and the abundance of the fruit, together with its color and size, suggests to

those not familiar with it an unusual harvest of fine huckleberries.

The handsome Dahoon holly, *I. Cassine*, a small tree with light gray bark and many red "berries," grows in damp soil near lakes and streams. The leaves are variable in shape.

Yaupon, *I. vomitoria*, a small-leaved holly, was an honored tree of the southern Indians, who from its leaves made their famous "black drink." Men, alone, were permitted to take it; an honor the women may have been happy to escape. At certain times the warriors went in large numbers to some locality where yaupon was abundant, and in a great kettle made a strong decoction of the leaves. Large quantities were swallowed, but seldom retained. For several days the Indians continued this practice, and the rare few who were able to drink and retain the draughts were entrusted with the most honorable and difficult commissions.

Early white settlers of the southern states prepared from the dried and roasted leaves of yaupon, and sometimes from those of the Dahoon holly, a much milder drink, which they used as a substitute for tea. The leaves of the South American *yerba maté*, *I. paraguariensis*, contain a similar principle, and are used for the favorite beverage of that name, sometimes called Paraguay tea. The prepared leaves may be bought in the larger cities of this country.

The spiny-leaved holly used in Christmas decorations, *I. opaca*, is found in the peninsula, but is less common than in the northern part of the state.

***Ilex glabra*.** Gallberry. Inkberry. Winterberry. Shrub 2-5 ft. tall. Leaves evergreen, usually broadened upward, entire or toothed toward apex, 1-2 in. long. Flowers white, small, in clusters in leaf-axils. Sepals, petals, and stamens 4-6 each. Fruit black. Sandy soil, often in damp locations. Blooming in spring. Fla. to Mass. and La.

Ilex Cassine. Dahoon holly. Shrub or tree. Leaves evergreen, 2-4 in. long, usually broadened upward, variable, entire or slightly toothed. Fruit red. Swamps. Fla. to Va. and La.

Ilex vomitoria. Yaupon. Cassena. Shrub or small tree. Leaves evergreen, oval or oblong, shallowly toothed, about 1 in. long. Fruit red. Swamps. Fla. to Va., Texas, and Ark.

A holly-like shrub of the staff-tree family, *Crossopetalum floridanum*, with short, prostrate branches, small, opposite, spiny, oval leaves, and tiny red fruit, is found in dry soil in the southern part of the peninsula.

DODONAEA FAMILY (*Dodonaeaceae*)

Shrub. Leaves alternate, entire, evergreen. Flowers small, greenish, corolla lacking. Capsules 3-winged, 3-seeded.

Dodonaea viscosa, a shrub locally abundant in sand along the coast of southern Florida, is peculiar in its sticky leaves and its winged capsules. The resinous-dotted leaves, one to four inches long, are very numerous; they are oblong or are broadened upward from a wedge-shaped base. The inconspicuous flowers are in short racemes, and have a 3-5-parted calyx and eight stamens. The three-winged, or sometimes four-winged capsules are slightly more than half an inch broad, and are nearly as long as broad.

BUCKEYE FAMILY (*Aesculaceae*)

Tree or shrub. Flowers red. Leaves opposite, of 5-7 leaflets.

RED BUCKEYE (Genus *Aesculus*)

The attractive red buckeye is far more slender than its relative the cultivated horsechestnut, and is less con-

spicuous in bloom, but bears graceful, few-flowered panicles of reddish flowers. Red, also, are the small branches of the inflorescence, and reddest of all is the tubular calyx surrounding the base of the narrow petals. It is found occasionally in damp woods in the peninsula, but is less common than in the northern part of the state.

Darwin observed that under favorable conditions the flowers of this buckeye showed a tendency to become double. The seeds contain a narcotic poison, and are said to stupefy fish when pounded and thrown into streams.

Aesculus Pavia. Flowers red, 1 in. long, in terminal panicles 4-8 in. long. Calyx 5-lobed, petals 4, unequal, stamens usually 7. Capsule smooth, 1-2 in. across. Shrub or small tree. Leaves of 5-7 finely toothed leaflets 2-6 in. long, palmately arranged. Low woods. Blooming in spring. Fla. to Va. and Mo.

SOAPBERRY FAMILY (*Sapindaceae*)

Trees or vines. Leaves alternate, of several leaflets. Flowers minute, sepals and petals 4-5 each, stamens 8 or 10.

BALLOON-VINE. HEARTSEED (Genus *Cardiospermum*)

The air-filled balloons in which the seeds ripen are the most remarkable feature of these vines, whose young leaves range from pale rose to green. The cultivated balloon-vine, *C. Halicacabum*, occasionally grows wild and, it is said, may be cooked as a pot-herb. The native species, *C. microcarpum*, is a more delicate vine, and has smaller "balloons."

The black seeds show at one side a white spot, fancifully called heart-shaped, to which the plants owe their name of heartseed, and also their former medicinal use

in disorders of the heart, for superstition of older days declared such marks to be evidence that "God hath imprinted upon the Plants, Herbs, and Flowers, as it were in Hieroglyphicks, the very signature of their Vertues." This famous "Doctrine of Signatures" offered wide fields to the imagination, and during the sixteenth and seventeenth centuries won many adherents.

Cardiospermum microcarpum. Flowers greenish, inconspicuous. Capsule inflated, 3-seeded, $\frac{1}{2}$ in. in diameter. Vine, climbing by tendrils. Leaves of 3 deeply toothed and parted leaflets. Roadsides and thickets. Blooming from spring to fall. Fla. to Texas.

SOAPBERRY and BUTTERBOUGH (Genera *Sapindus* and *Exothia*)

Trees and shrubs of the genus *Sapindus* are noted for their saponaceous fruit, which has long been used for cleansing purposes. *S. Saponaria*, a small tree of the southern part of the peninsula, has leaves of four to ten bright green leaflets, one to five inches long, on a broadly winged rachis. The minute hairy flowers are in large panicles. The globose fruit, nearly three-fourths of an inch in diameter, becomes orange or brown in ripening, and contains one or more large black seeds.

Another soapberry, *S. marginatus*, has leaflets on a nearly wingless rachis, and panicles of white or reddish flowers.

The butterbough, or inkwood, *Exothia paniculata*, a tree of southern Florida, has leaves of four or six glossy leaflets, two to five inches long, small, fragrant white flowers in panicles, and globose one-seeded fruit, about half an inch in diameter, which becomes orange and finally purple in ripening.

Cultivated fruits of this family include the Chinese litchi, the Spanish lime, the longan, and the akee.

BUCKTHORN FAMILY (*Rhamnaceæ*)

Low shrubs and woody vines. Flowers tiny, white. Sepals, petals, and stamens 5 each.

RED-SHANK. REDROOT. NEW JERSEY TEA (Genus
Ceanothus)

Our plants of this genus show a low, bushy growth, and bloom profusely in many-flowered clusters of tiny flowers, whose sepals and flower-stalks, like the petals, are white. The common species in the peninsula are *C. microphyllus* and *C. intermedius*; dry pinelands are their preferred habitat, and late winter and spring their chief blossoming season, but their flowers are often seen in autumn, too, when the three-lobed fruit is splitting into three one-seeded nutlets. The little petals are peculiar in form, and are like miniature dippers. Flowers of this genus are remarkable in yielding a fragrant and slightly soapy lather when rubbed in water.

Several species of this genus, which is found only in North America, are cultivated as ornamental plants in England, among them the New Jersey tea, *C. americanus*, noted for its use during the American Revolution when the dried leaves were a substitute for tea. The same species was also used to dye wool a cinnamon color.

The names red-shank and redroot refer to the thick reddish root that is characteristic of many species.

The jujubes (species of *Zizyphus*) belong to this family, as does the buckthorn, or Indian cherry, *Rhamnus caroliniana*, of the southern states, a shrub or tree with minute greenish flowers, oblong leaves, three to five inches long, and many axillary, short-stalked umbels of small edible fruit that change from red to black in ripening.

***Ceanothus intermedius*.** Flowers white, tiny, in many short panicles terminating the branches. Shrub 1-3 ft. tall. Leaves alternate, broadest near base, finely toothed, 1 in. long or less. Pinelands. Blooming chiefly from late winter to summer. Fla. to Ga. and Ala.

Ceanothus americanus. Similar to above species, but larger. Leaves 1-3 in. long. Dry woods. Fla. to Texas and northward.

Ceanothus microphyllus. Flowers similar to above species. Leaves evergreen, roundish, entire, less than $\frac{1}{4}$ in. long. Fla. and Ga.

Ceanothus serpyllifolius. Leaves evergreen, oblong, minutely toothed, less than $\frac{1}{2}$ in. long. Branches slender, spreading. Fla. and Ga.

RATTAN-VINE. SUPPLE-JACK (*Berchemia scandens*)

This high-climbing woody vine is not uncommon in low woods. The smooth alternate leaves, one to three inches long, are either oval or are broadest near the base, and have entire or wavy margins, and prominent veins. The minute greenish white flowers are in small panicles. The fruit is a dark purple oblong drupe, about one-fourth of an inch long.

Sageretia minutiflora, a straggling vine-like shrub, growing chiefly near the coast, has spine-like branches, opposite, toothed leaves one-half to two inches long, which are broadest near the base, minute white flowers in small spikes, and dark purple globose fruit, about one-fourth of an inch in diameter, which separates into three one-seeded nutlets.

GRAPE FAMILY (*Vitaceae*)

Woody vines, usually climbing by tendrils. Leaves alternate. Flowers greenish, minute. Fruit a berry.

MUSCADINES, PEPPER-VINE, VIRGINIA CREEPER, etc. (Several genera)

Grape and muscadine vines climb over trees and shrubs, and hang in green luxuriance from their branches. Muscadine vines are easily distinguished from those of other grapes by the tendrils, which are unbranched in muscadines, but in grapes of the genus *Vitis* are forked. Two species of muscadines, with very different fruit, are found

in Florida. The fruit of *Muscadinia Munsoniana*, a vine which sends out long aërial roots, is small, thin-skinned, shining, and acid; that of *M. rotundifolia* is large, thick-skinned, sweet, and richly flavored. The flowers of grapes and muscadines have minute petals which, although separate at the base, cohere at their tips and fall off as a cap. The tendrils are opposite the leaves, which are lobed or toothed.

The attractive pepper-vine, *Ampelopsis arborea*, is a bushy plant of damp locations that sometimes climbs by its few tendrils. It has large, twice-pinnate leaves of coarsely toothed leaflets, and bears in summer tiny green flowers in flat clusters. The small, inedible, bluish black berries are ripe in autumn.

The well-known Virginia creeper, *Ampelopsis quinquefolia* (*Parthenocissus*), with five-foliate leaves, is common in Florida woods.

The marine ivy, *Cissus incisa*, a vine growing near the shore, has light green, fleshy, three-foliate leaves, one to three inches long, whose leaflets are deeply toothed and cut, and are wedge-shaped at the base. Long aërial roots, hanging from the warty stems, finally penetrate the earth and form elongated tubers.

The tropical water liana, *Cissus sicyoides*, found in southern Florida, has a stem so full of sap that it is said a drink may be had by cutting it, and that the part above the cut will send down new roots into the earth and continue to live. This vine has thickish leaves, two to four inches long, heart-shaped at the base, and with bristle-tipped teeth. The small, inedible berries are black.

LINDEN FAMILY (*Tiliaceæ*)

Triumfetta semitriloba. A naturalized weed from the West Indies. Flowers yellow, small, in many small clusters along upper part of stems. Sepals 5, petals 5, stamens 10 or more.

Capsule small, globose, prickly. Plants 3-5 ft. tall, branched, pubescent. Leaves alternate, broad, toothed, often 3-lobed, 1-4 in. long. Waste places. Blooming all the year. Fla.

MALLOW FAMILY (*Malvaceae*)

Chiefly shrubs or shrubby plants. Leaves alternate, toothed or lobed. Petals 5, united at base. Stamens many, united in tube.

The mallow family, from which the Hindu god of love chose one of the five flowers with which he tipped his arrows, has representatives in every nook and corner of the Florida peninsula. In parks and gardens the red flame of the cultivated hibiscus glows the year around, borders of swamps are gay in summer with wild hibiscus, and several of our lowly wayside weeds are mallows.

A peculiarity of this family is that each flower contains many stamens, whose filaments are united in a column surrounding the pistil. This in an exaggerated form is seen in the hibiscus, whose stamen tube is long in comparison with that of the weeds described below. The five petals are slightly united at the base, as are the five sepals, and below them in several genera an involucre of bracts appears like a second calyx.

Clothing, food, and medicine are obtained from this large family. Strong fibers and mucilaginous sap are found in many species, and altheas, arbutilons, malvaviscus, hollyhocks, okra, and cotton are among its many cultivated members.

HIBISCUS. ROSE MALLOW (Genus *Hibiscus*)

One of the most striking of our wild mallows is the brilliant *H. coccineus*, whose large crimson flowers blaze in summer from the borders of swamps. Another beautiful native species, *H. grandiflorus*, has immense pale pink

flowers that are sometimes eight inches across. The naturalized *H. furcellatus*, with broad, velvety leaves, and flowers that vary from pinkish to bluish purple, blooms the year around in places along the East Coast.

The exotic species most commonly planted is the Chinese hibiscus, *H. rosa-sinensis*, whose bruised flowers are said to be used in Asia for darkening hair and eyebrows, and also for blacking shoes.

The roselle, also known as Jamaica sorrel and Florida cranberry, is a hibiscus, *H. sabdariffa*, whose dark red calyx, which enlarges and becomes juicy as the seeds ripen, is used in jellies, preserves, and cooling drinks. It is a handsome tropical annual that is easily grown in Florida.

Flowers of the genus *Kosteletzkya* resemble those of hibiscus, but the five-celled capsule has only one seed in each cell, whereas the hibiscus has several.

Hibiscus coccineus. Flowers crimson, 5-8 in. across, from leaf-axils. Stems 3-10 ft. tall. Leaves long-stalked, 5-parted, divisions narrow, toothed, 2-10 in. long. Marshes and swamps. Blooming in summer. Fla. and Ga.

Hibiscus grandiflorus. Flowers pink or white, with reddish center, 6-9 in. across. Stems 3-8 ft. tall. Leaves velvety, 3-lobed, toothed, as broad as long, 3-12 in. long. Marshes and swamps. Blooming in summer. Fla. to Ga. and Miss.

Hibiscus furcellatus. Flowers pinkish to bluish purple, somewhat nodding, 3-4 in. long. Calyx and capsule very hairy. Bracts of involucre T-shaped or forked at apex. Stems 3-8 ft. tall. Leaves broad, velvety, 2-6 in. long, toothed, often lobed. Damp places near the East Coast. Blooming all the year. Fla.

Hibiscus aculeatus. Flowers yellow or cream-color, with purple center, 3-4 in. across. Stems 2-6 ft. tall. Leaves rough, 3-5-lobed or -parted, broad, toothed, 2-5 in. long. Low sandy soil near swamps and ponds. Blooming in summer. Fla. to S. C. and La.

Hibiscus incanus. Flowers yellow, white, or pink, with crimson center, 4-8 in. across. Stems 3-7 ft. tall. Leaves broad, 2-6 in. long, toothed, velvety and whitish beneath. Swamps. Blooming from spring to fall. Fla. to Md. and Ala.

Kosteletzkya virginica. Flowers pink, about 2 in. across, in terminal leafy inflorescence. Plants 1-4 ft. tall. Leaves 2-5 in. long, broadest near base, often 3-lobed, toothed. Capsule hairy. Marshes, chiefly near the coast. Blooming all the year. Fla. to N. Y. and La.

TEAWEEED (Genus *Sida*)

Among the weeds bordering streets, and growing in cultivated and waste grounds, two species of teaweed are common—low, branching plants whose small, pale yellow flowers open for only a part of the day. These two species will not be confused if the length of the flower-stalk is noticed, as in *S. rhombifolia* it is half an inch or more long, and in *S. acuta* is very short. *S. Elliottii* is less common than these. *S. cordifolia*, an introduced weed, is extending its range from the southwestern coast of the peninsula.

Sida acuta. Flowers pale yellow or white, about $\frac{1}{2}$ in. across, from leaf-axils. Fruit splits into 10-12 small, beaked, 1-seeded divisions. Stems 1-3 ft. tall. Leaves 1-4 in. long, broadest near base, pointed, coarsely toothed. Waste grounds and roadsides. Blooming all the year. Fla. to Ala.

Sida rhombifolia. Similar to above species, see text. Leaves lighter in color beneath, narrower, and less coarsely toothed. Fla. to N. C. and Texas.

Sida cordifolia. Flowers dull yellow, along upper branches, often crowded. Stems 2-5 ft. tall. Leaves velvety, broad, 2-4 in. long, heart-shaped at base, toothed. Sandy soil. Fla.

Sida Elliottii. Flowers yellow, 1 in. across. Stems 1-2 ft. tall, slender. Leaves narrow, toothed, 1-3 in. long. Sandy soil. Blooming chiefly from spring to fall. Fla. to Va.

CAESAR'S WEED (Genus *Urena*)

This shrubby weed of waste grounds has little pink mallow flowers, and odd bristly fruit that catch on passers-by and cling tenaciously.

The mallow family is noted for mucilaginous sap and for strong fibers. The former is especially marked in okra pods, and tough fiber is discovered in Caesar's weed when one attempts to break a stem. Plants of this genus are cultivated in other countries for their fiber, from which cordage and coarse sacking are made. The most noted fiber of this family is, of course, that which surrounds the seeds of the cotton plant.

***Urena lobata*.** Flowers pink or rose, $\frac{1}{2}$ in. or more across, in leaf-axils and clustered along upper branches. Bracts below calyx 5-7. Fruit separates into 5 small, barbed, 1-seeded divisions. Stems 2-8 ft. tall. Leaves roundish, often lobed, soft with minute hairs. Introduced weed. Blooming all the year. Fla.

***Pavonia spinifex*.** Flowers yellow, $\frac{1}{2}$ in. across, from leaf-axils. Fruit separates into 5 small, 1-seeded divisions, each armed with three barbed spines. Shrub 3-10 ft. tall. Leaves toothed, hairy, broadest near base, 2-5 in. long. Sandy soil. Naturalized. Blooming chiefly from spring to fall. Fla. to S. C.

***Modiola caroliniana*.** Flowers reddish, small, solitary from leaf-axils. Stems prostrate, 6-24 in. long. Leaves roundish, 3-5-cleft and deeply toothed, 1-2 in. long. Waste places. Blooming from midwinter to fall. Fla. to Va. and Texas.

CHOCOLATE FAMILY (*Buettneriaceae*)

Allied to mallows, but with only 5 stamens.

***Riedlea glabrescens*.** Flowers rose-purple, not quite 1 in. across, in axillary and terminal clusters. Calyx 5-lobed, petals 5, white at base. Stems shrubby, spreading, 1-4 ft. long. Leaves alternate, broadest near base, toothed, mostly

1-2 in. long. Pinelands. Blooming chiefly in summer and fall. Southern peninsula Fla.

Waltheria americana. Flowers yellow, tiny, in dense clusters in leaf-axils. Stems spreading, shrubby, 1-4 ft. long. Leaves alternate, $\frac{1}{2}$ -2 in. long, broadest at base, toothed. Sandy soil. Blooming all the year. Southern Fla.

ST. JOHN'S-WORT FAMILY (*Hypericaceae*)

Flowers yellow, stamens many. Leaves opposite. Fruit a capsule.

ST. PETER'S-WORT (Genus *Ascyrum*)

Low shrubby plants of this genus bloom all the year in Florida, chiefly in damp soil, and are characterized by two-edged branches and four-petaled yellow flowers, in which the four sepals are in pairs of unequal size, the inner pair being narrower and in some species much shorter than the outer pair.

Crookea microsepala, a shrub of northern Florida, resembles the St. Peter's-worts in its four-petaled flowers, but its sepals are nearly equal in size.

Ascyrum tetrapetalum. Flowers yellow, about 1 in. across, axillary and terminal. Shrubby, 1-3 ft. tall. Leaves broadest at base, clasping stem, mostly about 1 in. long or less. Damp sandy soil. Blooming all the year. Fla. and Ga.

Ascyrum hypericoides. St. Andrew's cross. Flowers about $\frac{3}{4}$ in. across. Leaves narrowed at base, not clasping. Sandy soil. Blooming all the year. Fla. to Mass., Texas, and Ill.

ST. JOHN'S-WORTS (Genus *Hypericum*)

St. John's-worts differ from St. Peter's-worts in having flowers of five petals, instead of four. In Florida they bloom more or less throughout the year, though their season of most abundant flowering is during spring and summer. They are found chiefly in low ground and in shallow water, where the shrubby *H. aspalathoides*, with

many short needle-like leaves, often covers acres with its compact, level-topped growth, dotted with myriads of bright yellow flowers. Leaves on young plants of this species are very different from the needle-like adult foliage, as they are short and broad.

A lively herbalist of the seventeenth century suggested that the names of this family were given lest the saints "should lack pot-herbs." Name and superstition seem inextricably mixed in the St. John's-worts. One explanation is that the plant first called by that name, *H. perforatum*, begins to bloom on St. John the Baptist's day. Another explanation is that the plant was believed to give protection against evil spirits active on St. John's Eve, and was therefore given the name of that saint. And again—this plant gives a purple stain, which recalled to agile minds the fate of St. John, and also led adherents of the strange old "Doctrine of Signatures" to use the plant as a remedy for wounds.

The leaves of our *H. opacum* and certain other species are slightly odorous when crushed.

***Hypericum myrtifolium*.** Flowers yellow, nearly 1 in. across, in terminal clusters. Sepals 5, leaflike, petals 5, stamens many, in clusters. Shrubby, 1-3 ft. tall. Leaves leathery, 1 in. long or less, broadest at base, clasping stem. Damp pinelands. Blooming chiefly from spring to fall. Fla. to S. C. and Ala.

***Hypericum aspalathoides*.** Flowers about $\frac{1}{2}$ in. across. Plants shrubby, 1-3 ft. tall. Leaves many, clustered, very narrow, less than $\frac{1}{2}$ in. long. Low grounds and shallow water. Fla. to N. C. and La.

***Hypericum fasciculatum*.** Similar to *H. aspalathoides*, but 4-16 ft. tall. Leaves $\frac{1}{2}$ -1 in. long. Wet places. Fla. to N. C. and Texas.

***Hypericum opacum*.** Flowers small, in terminal flat-topped inflorescence. Stems 1-4 ft. tall, seldom branched. Leaves oblong, sessile, 1 in. long or less. Low pinelands and swamps. Blooming from spring to fall. Fla. to S. C. and Miss.

144 ROCKROSE AND TURNERA FAMILIES

TEA or CAMELLIA FAMILY (*Theaceae*)

Tree. Leaves alternate, evergreen. Flowers white, **showy**, petals 5. Fruit a woody capsule with winged seeds.

LOBLOLLY BAY (Genus *Gordonia*)

Soon after the exotic camellia blossoms in Florida gardens its relative the loblolly bay opens large white flowers in Florida swamps. The flowers are of nearly the same size as those of the sweet bay, but differ from them in being formed of five broad petals, united at the base, and in being only slightly fragrant.

The loblolly bay is sold by nurserymen, and is especially desirable for planting in private grounds, for it is one of our handsome native trees, and, though ordinarily growing in damp soil, will thrive even on high pineland. It is less common in the southern part of Florida than in the central and northern parts of the state.

Tea, also of this family, is seen in southern gardens.

Gordonia Lasianthus. Flowers white, 2-3 in. across, from axils of upper leaves. Sepals 5, silky, petals 5, stamens many, in 5 clusters which adhere to base of petals. Tree. Leaves minutely toothed, 2-6 in. long, narrowed at each end. Swamps. Blooming in spring and summer. Fla. to Va. and La.

ROCKROSE and TURNERA FAMILIES (*Cistaceae* and *Turneraceae*)

Flowers yellow, fragile, petals 5. Leaves alternate. Fruit a capsule.

ROCKROSE and PIRIQUETA (Genera *Helianthemum* and *Piriqueta*)

These fragile flowers of the sun have this in common, that they drop their golden petals all too quickly. At



FIG. 20. Loblolly Bay
Gordonia lasianthus

a touch the rockrose petals fall, and piriqueta flowers wilt or lose their petals almost as soon as picked.

In clear yellow color the flowers resemble St. John's-worts, but the plants differ in their alternate leaves. The piriqueta, moreover, has but five stamens in each flower, where the St. John's-worts have many. The rockrose, though having many stamens, differs from both in its calyx, as the two outer sepals are much smaller than the other three.

Piriqueta tomentosa is quick to take advantage of the easier conditions of life offered by partly cleared land, and such land that has been neglected is often gay with the bright flowers. The round green capsules of this genus are noticeable as they stand out stiffly on slender stalks, one of which rises from the axil of each leaf along the upper part of the stem.

Our common species of rockrose, *Helianthemum*, have a lower and more branched growth than piriqueta, and all, except *H. carolinianum*, bear both showy flowers and others that have no petals. The pine-barren rockrose, *H. corymbosum*, is common in sandy soil, often growing in spreading mats of slender, but woody, stems. The flowers open only in sunlight. The seaside rockrose, *H. arenicola*, prefers a precarious existence near the ocean to security inland, and is sometimes buried under drifting sand.

Piriqueta tomentosa. Flowers yellow, 1 in. across, solitary from leaf-axils. Sepals 5, petals 5, stamens 5. Plants 8-15 in. tall, seldom branched, clothed with short stellate hairs. Leaves oval or oblong, about 1 in. long, slightly toothed. Sandy soil. Blooming from midwinter to summer. Fla.

Piriqueta caroliniana. Similar to above species, but stem has longer hairs as well as short stellate ones. Leaves mostly 1-3 in. long. Fla. to N. C. and Ala.

Piriqueta glabrescens. Flowers similar to above, but leaves are very narrow, 1-2 in. long. Stems 1-2 ft. tall. Fla. peninsula.

Helianthemum carolinianum. Flowers yellow, 1 in. across, few. Sepals 5, unequal, petals 5, stamens many. Stems 4-12 in. tall. Leaves oval or oblong, 1-2 in. long, hairy, slightly toothed. Sandy soil. Blooming all the year. Fla. to S. C. and Texas.

Helianthemum corymbosum. Flowers $\frac{1}{2}$ in. across, in flat-topped terminal cluster. Stems 4-12 in. tall. Leaves oblong, about 1 in. long, pale beneath. Fla. to N. C. and La.

Helianthemum arenicola. Flowers $\frac{1}{2}$ in. across, few. Stems spreading, 3-8 in. long. Leaves narrow or oblong, 1 in. long or less. Sand near the coast. Blooming in spring and summer. Fla.

VIOLET FAMILY (*Violaceae*)

Stemless herbaceous plants. Flowers irregular, purple or white. Fruit a capsule.

VIOLETS (Genus *Viola*)

One of the most common violets in Florida, *V. septemloba*, scatters large, long-stemmed flowers through open pinelands in winter and spring. The leaves of this violet vary extremely; the early ones generally are entire, but the later leaves are lobed and parted in great diversity of form. The flowers range in color from pale violet to purple.

Two species of small white violets are abundant in damp places, and blossom during winter and spring.

Viola septemloba. Flowers violet to purple, 1 in. across, solitary on stalks as long as or longer than the leaves. Sepals 5, petals 5, lower one short-spurred at base, stamens 5. Leaves stalked, somewhat heart-shaped, entire, lobed, or parted. Pinelands. Blooming in winter and spring. Fla. to Va. and Miss.

Viola floridana. Flowers pale purple or white, smaller than in above species. Spurred petal not hairy. Leaves broad, 1-3 in. long, shallowly toothed. Damp woods. Blooming in spring. Fla.

Viola vittata. Flowers white, small. Leaves narrow, 4-12 in. long. Low grounds. Blooming in winter and spring. Fla and Ga. to Texas.

Viola primulifolia. Flowers white, small. Leaves oblong or broadest below middle, leaf-stalks usually winged. Damp soil. Blooming in winter and spring. Fla. to New Brunswick and Texas.

PAPAYA FAMILY (*Caricaceae*)

Small tree with crown of large, long-stalked, deeply lobed leaves. Sap milky. Flowers yellowish, sepals 5, petals 5, stamens 10. Fruit large, edible, borne close to the trunk.

PAPAYA. PAPAIA. MELON PAPAW (*Carica Papaya*)

This tropical plant was brought by the Spaniards to Florida, and had become naturalized before 1788, when the French botanist André Michaux recorded that he found it growing wild not far from Spruce Creek, north of New Smyrna. In its wild state it is not uncommon now near the coast of southern Florida, but the fruit is smaller and of less agreeable flavor than that of the cultivated varieties.

The trees, which are of rapid growth, like giant herbaceous plants, are ornamental, and the cultivated varieties yield immense crops of fruit. The green fruit may be cooked as a vegetable; the ripe fruit is eaten as a breakfast or dessert fruit or in salads, and is made into marmalade.

The drug papain is secured from the papaya, and its presence in the plant gives the leaves a remarkable effect on raw meat, which, through a somewhat digestive process, is made tender when wrapped in them for a short time.

PASSION-FLOWER FAMILY (*Passifloraceae*)

Vines, climbing by tendrils. Leaves alternate. Flowers with fringed inner crown. Fruit pulpy inside, with firm rind.

PASSION-FLOWER. PASSION-VINE. MAYPOP (Genus *Passiflora*)

Imagination vied with sober fact and came off victor when Spanish explorers found and named the passion-flowers of the New World and attempted to describe them. Fantastically seeing in these plants symbols of the sufferings of Christ, they pictured in their drawings the crown of thorns and the nails as actual parts of the flower, and in letters sent to Spain declared that the plant had been "designed by the great Creator that it might, in due time, assist in the conversion of the heathen among whom it grows."

A South American species first caught their attention, but the symbolism was equally applicable to the plant found in Florida. The lobed leaves were, to them, the hands of Christ's persecutors; the tendrils were the whips with which He was scourged; the sepals and petals represented ten disciples—Judas and Peter being absent. In the pistil they saw the three nails; the five stamens recalled the five wounds; the young seedpod was the sponge dipped in vinegar, and the short stalk below it represented the pillar against which Christ was scourged. Opinion was divided in regard to the beautiful fringed corona; some saw in it the "parted vesture," others believed it to represent the aureole about the head of the risen Lord, while still others contended that it symbolized the crown of thorns, and clinched their argument by asserting that the number of filaments in the corona was miraculously the same as the number of thorns (72) that tradition ascribes to that crown.



FIG. 21. Passion-Flower
Passiflora incarnata

The imagination of Americans does not seem to work along early Spanish lines, for the beautiful passion-flower of our southern states is known by the homely name of maypop. After a warm winter this species, *P. incarnata*, begins to bloom in April. It is locally abundant in dry soil, where it climbs on shrubs and trees, or lies on the ground, and sometimes becomes a weed in cleared land. A crown of many lavender filaments, banded with purple and white, is spread over the petals. Glands on the leaf-stalk, and below the calyx, exude a nectar when the plant is in bloom. The edible fruit contains many seeds embedded in pulp which lacks the aromatic flavor of the cultivated passion-fruits.

P. suberosa, whose small flowers lack petals, and whose fruit is no larger than a big huckleberry, is a common vine in thickets in the southern part of the peninsula.

Passiflora incarnata. Flowers lavender, 2 in. across, with a showy inner fringe (corona), solitary from leaf-axils. Sepals 5, petals 5, stamens 5. Fruit yellowish, oval or oblong, smooth, 2-3 in. long. Vine. Leaves 3-lobed, 3-5 in. long. Dry soil. Blooming in spring and summer. Fla. to Va. and Mo.

Passiflora suberosa. Flowers greenish, small. Petals none. Leaves entire or 3-lobed, 1-4 in. long. Fruit blackish purple, small. Thickets. Blooming all the year. Southern peninsula Fla.

LOASA FAMILY (*Loasaceae*)

Flowers yellow. Leaves and capsules cling tenaciously to whatever touches them.

POOR-MAN'S PATCHES. STICK-LEAF (Genus *Mentzelia*)

By the road through the hammock at Palm Beach one of the common plants in the thicket between road and forest bears bright yellow flowers about as large as a

quarter of a dollar. It is easy to stop and pick a flower of this stick-leaf, but difficult not to stop too long and pick too much, for the whole plant lays hold of one, and will part with leaves, seedpods, and branches rather than let go.

The spreading stems are brittle, and are clothed in a shining papery bark; the rest of the plant is covered with minute barbed hairs which cling so tenaciously to garments that the plant may be identified by this characteristic alone. The plant is common in many places in southern Florida.

Mentzelia floridana. Flowers yellow, about 1 in. across. Sepals 5, petals 5, stamens many. Stems 2-6 ft. long. Leaves alternate, broadest at base, somewhat 3-lobed, toothed, 1-3 in. long, very adhesive. Thickets. Blooming all the year. South Fla.

CACTUS FAMILY (*Cactaceae*)

Plants with thick, fleshy, green, jointed or angled, leafless stems. Flowers showy, yellow or white, petals many. Fruit pulpy.

NIGHT-BLOOMING CACTI (Genera *Hylocereus* and *Harrisia*)

Among the strange growths in South Florida hammocks are species of night-blooming cacti, whose fleshy stems push like spiny green snakes through the bushes, and up the trunks of trees. The strawberry pear, *Hylocereus triangularis*, has three-angled stems, immense white flowers, six to eight inches across, and large scarlet fruit, three to four inches long, in which many tiny black seeds are embedded in a crisp, sweet, edible pulp. It is only occasionally, however, that fruit matures. The prickly apple, *Harrisia*, has cylindrical fluted or ribbed branches, somewhat smaller flowers, and yellowish fruit.

PRICKLY PEAR. INDIAN FIG (Genus *Opuntia*)

Scattered here and there throughout the pinelands, going down to meet the ocean on the sandy shores, and not disdaining the rock foundation of southern Florida, prickly pear cacti are at home in every part of the state. Several species are found, and their large yellow flowers are in strange contrast with the ugly stems and still more ugly spines, which in some species are sharp and stout enough to pierce shoe leather. The flattened, padlike joints bear groups of minute bristles and of longer spines, and, though the plants are practically leafless, tiny awl-shaped leaves, which soon fall, appear with each group of bristles. *O. austrina*, one of the more common, has long, tuber-bearing roots.

Opuntia ammophila, a grayish green prickly pear cactus that is sometimes six feet tall and tree-like in appearance, grows in the dry sand of the "scrub," and is copiously armed with slender spines.

The sweet but insipid fruit of the larger prickly pears was eaten by the Indians, and is occasionally made into jelly. In other countries sugar has been made from the fruit, and the juice has been used in confectionery.

Opuntia austrina. Flowers yellow, 2-3 in. across. Petals many, inner sepals petal-like. Stamens many. Fruit purple, about 1 in. long. Plants spreading, joints 2-4 in. long, spines solitary or 2 together. Dry soil. Blooming in spring. Fla.

Opuntia Dillenii. Flowers yellow or reddish, 2-3 in. across. Fruit purple, about 2 in. long. Plants erect, joints 4-12 in. long, spines 3-6 together. Near the coast. Fla. peninsula.

Opuntia ficus-indica. Flowers yellow, 3-4 in. across. Fruit reddish, 2-3 in. long. Plants 3-15 ft. tall, joints 10-18 in. long, spines usually lacking. Fields and waste places. Fla.

LAUREL FAMILY (*Lauraceae*)

A leafless, yellowish, parasitic, twining vine.

Also:

Trees. Leaves evergreen, alternate, entire, aromatic. Flowers small, 6-parted, corolla none. Fruit a small 1-seeded drupe.

DODDER-LAUREL. WOE-VINE (*Cassytha filiformis*)

This aberrant laurel and the common dodders of the morning glory family are noted examples of similarity of habit associated with similarity of form, for, although belonging to different families of plants, they are so alike in general appearance that only a student of botany would note their points of difference. The young seedlings of both attach themselves to other plants and, severing their own connection with the earth, live as parasites on their unfortunate hosts. Leafless, or practically so, their slender stems of unpleasant yellowish green or yellow twine on grasses, herbs, and shrubs.

The dodder-laurel, or laurel-dodder, is conspicuous in the southern part of the peninsula, especially towards the coast, where it often covers shrubs like a shroud, and hangs in tangled masses from the branches. The flowers are minute. The somewhat pulpy fruit contains one seed.

The other dodders (*Cuscuta*) are related to the morning glories, but the *Cassytha* is thought to be a black sheep of the laurel family, and therefore allied to the noted bay tree of southern Europe—the laurel of tradition and song.

RED BAY. SWAMP BAY (Genus *Persea* (*Tamala*))

Camphor, cinnamon, and avocadoes are noted exotic trees of this family, which is chiefly represented in our native flora by the red bays—trees with evergreen leaves of characteristic aromatic flavor, small greenish flowers

in stalked clusters from the leaf-axils, and dark blue aromatic fruit, one-fourth to one-half an inch long. The anthers are peculiar in opening by little hinged valves that lift upward, but close during a shower and keep the pollen dry.

Persea Borbonia, a large tree, has smooth, elliptical or oblong, pointed leaves, two to six inches long. *P. pubescens*, a smaller tree, has leaves whose under surface is minutely downy, as are also the flower-stalks. Both are found in swamps and hammocks, and bloom in spring. *P. littoralis*, with leaves only one to two inches long, grows in sand near the coast.

The sassafras, also of this family, is found in northern Florida.

MEADOW BEAUTY FAMILY (*Melastomaceae*)

Perennial plants. Flowers chiefly magenta or pink. Petals 4. Leaves opposite. Fruit a capsule.

MEADOW BEAUTY. DEER-GRASS (Genus *Rhexia*)

The beautiful flowers of this genus are common from spring to autumn, nor is it rare to find belated blossoms in winter.

Pink, pale purple, and rose-purple, or magenta, are the colors of the common species, whose flowers are decked with golden anthers of large size. The four somewhat unsymmetrical petals, eight stamens, and the urn-shaped capsule enclosed in the calyx-tube are characteristics by which it is easy to identify these plants. Their usual location is in damp or marshy places, and here, after the petals have fallen, the seedpods, like miniature models for graceful pottery, are found in autumn and winter.

A handsome shrub of this family, *Tetrazygia bicolor*, with many white flowers, blooms in summer in extreme southern Florida, and has berry-like fruit.

The exotic *Tibouchina* (*Lasiandra*), a shrub with large rhexia-like flowers of rich purple, is sometimes planted in Florida.

Rhexia Nashii. Flowers pale or deep magenta, 1-2 in. across, terminal and from upper axils. Sepals 4, petals 4, stamens 8. Stems 1-3 ft. tall, hairy, branched. Leaves 3-nerved, 1-2 in. long, usually broadest near base, hairy, minutely toothed, nearly sessile. Low grounds. Blooming from spring to fall. Fla.

Rhexia mariana. Similar to above species, but leaves are not hairy. Low sandy soil. Fla. to N. Y., Texas, and Mo.

Rhexia cubensis. Flowers similar to above species, but leaves are narrow and 1-nerved. Stems 6-20 in. tall. Marshy places. Fla. to Ga. and Miss.

Rhexia Alifanus. Flowers nearly 2 in. across. Stems 2-3 ft. tall, mostly unbranched. Leaves smooth, thickish, somewhat glaucous, 1-3 in. long. Low pinelands. Fla. to N. C. and La.

Rhexia filiformis. Flowers pale purple, few, not quite 1 in. across. Stems 4-15 in. tall, slender, seldom branched. Leaves very narrow. Low sandy soil. Fla. and Ga.

Rhexia ciliosa. Flowers deep pink, about 1 in. across. Stems 1-2 ft. tall. Leaves broad, hairy, less than 1 in. long, minutely toothed. Low sandy soil. Fla. to Md. and La.

Rhexia serrulata. Flowers pink, less than 1 in. across, few. Stems 3-12 in. tall. Leaves smooth, oval or roundish, less than $\frac{1}{2}$ in. long. Low pinelands. Blooming all the year. Fla. and Ga.

LOOSESTRIFE FAMILY (*Lythraceae*)

The purple loosestrife, *Lythrum lanceolatum*, is an erect plant, two to five feet tall, of low grounds, whose many flowers, though small, make some display of color. The plant is easily identified by the six violet or purple petals borne at the top of the ribbed calyx, which encloses

the seedpod but is not adherent to it. The leaves are opposite and entire, and the flowers are in many leafy racemes. The low *L. Vulneraria*, with creeping stems, short oblong or oval sessile leaves, and little purple flowers in the leaf-axils, is sometimes seen in damp soil. The arrangement of the tiny petals in these plants suggests that of the cultivated crêpe myrtles, to which they are related.

Our more common species of this family are inconspicuous homely plants of damp places, *Ammannia* and *Rotala*, with spreading stems, opposite, narrow, entire leaves, and minute flowers sessile in their axils. The parts of the flowers are in fours, and the seedpod is enclosed in the four-toothed calyx.

MYRTLE FAMILY (*Myrtaceae*)

Shrubs or trees. Leaves opposite, evergreen, entire. Flowers white. Sepals and petals 4 or 5 each, stamens many. Fruit berry-like, crowned with persistent calyx.

SPICE TREE and STOPPER (Genera *Anamomis* and *Eugenia*)

It is from this large family that Florida has taken many of its exotics—trees, shrubs, and fruits. No other family is so widely represented among cultivated plants in the peninsula, or has contributed so many ornamental and useful species to the state.

From Australia have come the eucalyptus, cajaput, and bottle-brush trees, whose flowers, like those of the rose-apple from the East Indies, show a profusion of long stamens—white, cream-color, or crimson—that are far more conspicuous than the small petals. From South America and Central America we have the guavas, downy myrtle, Suriname cherry, feijoa, and other fruits.

156 MANGROVE FAMILIES, RED AND WHITE

Aromatic oils abound in many plants of this family; notably in the eucalypts and in cloves, and noticeably in the leaves of many species, as in the sweet myrtle, the Suriname cherry, and our native spice tree, *Ananomis dichotoma*, of the South Florida coastal region, a small tree whose dark red fruit, only a fourth of an inch long, suggests miniature guavas. The flowers, in forked clusters of three, five, or seven from the leaf-axils, resemble on a small scale the flowers of the common guava, but are barely a quarter of an inch across. The numerous leathery leaves, which are fragrant when crushed, are about an inch in length and are broadened upward.

Several attractive shrubs or trees of the genus *Eugenia*, growing near the coast in extreme southern Florida, suggest the Cattley guava in their flowers and also in their leaves, which are dark green above, paler and minutely dotted with black beneath, and have slightly revolute margins. The leaves of white stopper, *E. axillaris*, are broadest below the middle, and are one to two inches long. In Spanish stopper, *E. buxifolia*, the leaves are about an inch in length, and are broadened upward or are sometimes oblong. The small fruit of these two species is black. The fruit of red stopper, *E. confusa*, is red, and the leaves, one to two inches long, are broadest near the base and are abruptly pointed.

MANGROVE FAMILIES, RED and WHITE (*Rhizophoraceae* and *Combretaceae*)

Maritime trees or shrubs. Leaves evergreen, entire. Flowers small.

MANGROVE, WHITE MANGROVE, and BUTTONWOOD (Several genera)

In many places on the coast of southern Florida, and inland for a number of miles along the rivers, the red

mangrove, *Rhizophora Mangle*, forms impenetrable barriers of arching stilt-roots below, and interlaced branches above from which hangs the extraordinary fruit. The dull yellow leathery flowers, of four sepals and four petals, are not conspicuous, but the fruit is remarkable in that the seed germinates several months before it falls from the tree. From this strange fruit the stout radicle protrudes downward in such a position that, when the fruit falls, it sinks into the mud and thus sets out the young plant in the most favorable conditions for continued growth. Spreading in this way year after year around the parent trees, mangroves reach water too deep for growth, and then the fallen fruit floats away to other shores, and new colonies are started. The leathery opposite leaves are two to six inches long.

The white mangrove, *Laguncularia racemosa*, a tree with opposite leaves, one to two inches long, has flowers of five sepals, five tiny petals, and ten stamens. The leathery fruit is not quite an inch in length. Narrow upright growths from the roots, which are believed to aërate them, aid in land-formation by holding, as do the roots of other mangroves, all manner of débris that is washed in by the tides or out by the rains.

The button-mangrove, or buttonwood, *Conocarpus erecta*, has alternate leaves, one to two inches long, pointed at each end, and minute flowers in short racemes, which later form a cone-like fruiting-head barely half an inch long.

Mangroves of three different families grow on our shores, often intermixed, and often in large areas of but one species. The black mangrove, whose petals are united, is described in the verbena family.

The name mangrove is sometimes restricted to species of *Rhizophora*, the true mangroves, which are not related botanically to the other trees and shrubs of similar habitats that are locally known by that name.

EVENING PRIMROSE FAMILY (*Onagraceae*
(*Epilobiaceae*))

The seed-vessel is an important aid in recognizing plants of this family. It is situated below the flower, and in several genera attains noticeable size before the flower opens. Because of this peculiarity certain species were known in former days as "son-before-the-father," the explanation of the name being that "the long husks in which the seed is contained do come forth and waxe great before the floure openeth."

The floral members in the majority are in sets of four, i.e., four sepals, four petals, four or eight stamens, and a somewhat four-sided capsule. The greater number of Florida species bloom in yellow.

The fuchsias, natives of Mexico and of South America, are of this family.

PRIMROSE WILLOW. PRIMROSE (Genus *Jussiaea*)

One of our most beautiful primroses in the tall *J. peruviana*, whose shrubby growth by river banks and borders of swamps in southern Florida is ornamented through the greater part of the year with large yellow flowers, in which the petals are so lightly attached that they fall almost as soon as a flower is picked.

Jussiaea peruviana. Flowers yellow, about 2 in. across, from leaf-axils. Sepals 4, petals 4, stamens 8. Capsule stout, nearly 1 in. long, 4-sided. Shrubby, 4-12 ft. tall, hairy. Leaves alternate, oval or broadest at base, pointed, 1-4 in. long. River and swamp borders. Blooming all the year. Fla. peninsula.

Jussiaea scabra. Flowers 1 in. across. Capsule cylindric, about 1 in. long. Plants 2-4 ft. tall, hairy. Leaves 1-2 in. long. Damp places. Fla.

Jussiaea leptocarpa. Flowers less than 1 in. across. Petals and sepals usually 6 each. Stems 2-6 ft. tall. Leaves 1-8 in. long. Capsule cylindric, about 2 in. long. Marshes. Fla. to Ga., Texas, and Ark.

EVENING PRIMROSE (Genus *Oenothera*)

A true evening primrose, *O. laciniata*, whose flowers bloom by night, is common in dry soil. It is usually low and spreading in growth, with light yellow flowers that open in the late afternoon and change to copper-color or reddish by the following morning.

A beautiful western species, *O. speciosa* (*Hartmannia*), whose white flowers, three to four inches across, open by day and change to pink, has become naturalized on the East Coast and elsewhere, as has the silky-leaved *O. Drummondii*, an evening primrose whose night-blooming yellow flowers are two to three inches broad.

Oenothera laciniata. Flowers yellow, about 1 in. across, in leaf-axils. Sepals 4, petals 4, stamens 8. Capsule 1 in. long. Stems 6-24 in. long. Leaves alternate, 1-2 in. long, usually deeply toothed or lobed. Dry soil. Blooming chiefly from spring to fall. Fla. to N. J., Texas and Neb.

Oenothera humifusa. Flowers 1 in. across. Leaves very silky, toothed or entire, mostly about 1 in. long. On sea beaches. Blooming from late winter to fall. Fla. to N. J.

FALSE LOOSESTRIFE (Genus *Ludwigia*)

Several of this genus grow in low grounds and bear alternate leaves and inconspicuous axillary or terminal flowers, which in some species lack petals. A short, somewhat square seedpod surmounted by four sepals is characteristic of these plants. In *L. suffruticosa* the very small flowers are in compact terminal heads, and lack petals. *L. alata*, also without petals, has angled or winged

stems which bear a few inconspicuous axillary flowers near the ends of the branches.

The flowers of the more noticeable *L. virgata* drop their petals the moment the plant is touched. In winter the leafless stems bearing little box-like seedpods are often found near those of the meadow beauties with their urn-shaped capsules.

Ludwigiantha arcuata, a somewhat purslane-like creeping plant of wet grounds, is sometimes included in this genus.

Ludwigia virgata. Flowers yellow, about 1 in. across, in wand-like racemes. Sepals 4, petals 4, stamens usually 4. Capsule cubic, small. Stems slender, 1-4 ft. tall. Leaves narrow, 1-4 in. long. Low grounds. Blooming from late winter to fall. Fla. to N. C. and La.

Ludwigiantha arcuata. Flowers yellow, about $\frac{1}{2}$ in. across, on slender stalks from leaf-axils. Sepals 4, petals 4, stamens 4. Capsule small, slightly curved. Stems creeping, 4-15 in. long. Leaves opposite, smooth, rather narrow, 1 in. long or less. Wet shores and swamps. Blooming chiefly from spring to fall. Fla. to Va.

GAURA (Genus *Gaura*)

An exception to the usual yellow of Florida flowers of this family is shown in *gaura*, which blooms in long, slender spikes of small flowers whose narrow petals are tinged with pink. This genus is peculiar in its little nut-like, angled fruit, which does not split open as do the capsules of our other genera.

Gaura angustifolia. Flowers white or pink, about $\frac{1}{2}$ in. across, in wand-like spikes. Sepals and petals 3 or 4 each, stamens 6-8. Fruit small, minutely hairy. Plants 2-4 ft. tall. Leaves alternate, narrow, 1-3 in. long, toothed or nearly entire. Dry soil. Blooming from spring to fall. Fla. to N. C.

Gaura simulans. Similar to above, but fruit is smooth. South Fla.

DOGWOOD FAMILY (*Cornaceae*)

Shrubs or trees. Leaves opposite, entire. Flowers small, white or greenish, petals 4, stamens 4. Fruit a small drupe.

DOGWOOD (Genus *Cornus*)

The beautiful flowering dogwood, *C. florida*, whose compact clusters of tiny flowers are surrounded by showy involucre of four broad, petal-like white bracts, is common in northern Florida and in the northern part of the peninsula, and is found occasionally as far south as Bartow.

The common dogwood of southern Florida is the less conspicuous *C. stricta*, a shrub or small tree that grows in swampy places and blooms in spring in flat-topped terminal clusters of small white flowers. The leaves, which are pointed at both ends, are from one to four inches long. The small globose fruit is pale blue.

CARROT FAMILY (*Umbelliferae* (*Ammiaceae*))

Herbaceous plants. Leaves alternate. Flowers tiny, in umbels or in dense heads. Sepals, petals, and stamens 5 each.

The flower-hunter who tastes an unknown plant to determine its family, or smells the bruised leaves for the same purpose, learns to recognize the characteristic taste and odor of the carrot family. The species are difficult to analyze, nor are they, in general, conspicuous enough to attract attention, or to excite curiosity in regard to their names.

The flower-clusters of the majority are formed of several short slender stalks that spring from a common center and bear each a tiny flower at the tip. When several such umbels rise from a common center the umbel is

said to be compound. The leaves are usually much divided, but exceptions are shown in a few species.

The aromatic flavor characteristic of the family is highly developed in the seeds of fennel, anise, coriander, dill, and caraway, and to a less degree in the leaves of parsley, celery, carrots, and parsnips.

PENNYWORT. MARSH PENNYWORT (Genera *Hydrocotyle* and *Centella*)

Hydrocotyle umbellata, called pennywort from the shape of its small roundish leaves, is common in low grounds and near lakes and streams, where the creeping stems spread extensively, carpeting the ground with many leaves, and bearing small umbels of tiny flowers. In this pennywort, which often grows in shallow water, the leaf-stalk is attached near the center of the leaf. In the slightly larger *Centella repanda* the stalk is at the base of the blade, and the tiny flowers are often tinged with pink.

BUTTON SNAKEROOT (Genus *Eryngium*)

Button snakeroots differ from our other plants of this family in crowding their tiny blue or white flowers in compact globular or cylindrical heads. They are common in many places.

E. aromaticum, which blooms nearly all the year, is found in dry soil, where the spreading or prostrate stems, one to two feet long, bear many small bluish or lead-colored heads. The numerous stiff leaves, seldom more than an inch in length and usually less, are three-cleft, and the spreading divisions are spine-tipped.

The slender, prostrate *E. Baldwinii*, with thread-like stems and distant leaves, grows in damp soil. The bluish flowering-heads, which begin to bloom in early spring, are barely one-fourth of an inch long.

The stout, erect, yucca-leaved *E. synchaetum*, two to four feet tall, blooms in pinelands during summer. The



FIG. 22. Button Snakeroot
Eryngium aromaticum

leaves resemble those of yuccas in shape, as they have parallel veins and are long and narrow. They are chiefly basal, one to two feet long, and bear short bristles at intervals along the margins. The stems branch stiffly near the top and bear many somewhat teasel-like flowering heads, half to three-fourths of an inch long.

Handsome European species of this genus are in cultivation, and "kissing comfits," an old English sweetmeat, were made by candying the roots of an *Eryngium*.

SPERMOLEPIS (Genus *Spermolepis*)

This very common dooryard weed, *S. divaricatum*, appears in dry ground in winter. It is a short-lived plant that begins to bloom when only a few inches tall, and dies in spring. It is of slender, upright growth, from a few inches to a foot or more in height, with thread-like branches, delicate divided leaves, and minute white flowers in compound umbels.

OXYPOLIS (Genus *Oxypolis*)

O. filiformis is remarkable in this family for its hollow, rush-like, jointed leaves, or to speak more correctly, the leaves are reduced to round bladeless petioles, technically known as phyllodes. The plants, which are common in wet grounds during summer and fall, grow from two to six feet in height, and bear compound umbels of minute white flowers.

HEATH FAMILY (*Ericaceae*)

Shrubs. Leaves alternate. Flowers white or pink. Fruit a capsule.

BEFARIA. TAR-FLOWER (Genus *Befaria* (*Bejaria*))

The heath family, which ornaments the Blue Ridge Mountains with rhododendrons, azaleas, and laurel, gives

the beautiful befaria to Florida. Nearly as common during spring and summer as the fetterbush of this family is during winter, this handsome shrub blooms abundantly in many places through the wide pineland country, growing in many low groups of branching stems, and bearing many slightly fragrant white flowers, tinged with pink at the center.

The number of petals—seven—is unusual, and is a feature by which the befaria is easily identified. The calyx and flower buds are sticky, as though freshly varnished, and small insects are caught on them.

Befaria racemosa. Flowers white, about 2 in. across, in terminal racemes. Calyx 7-toothed, petals 7, narrow, stamens 14. Shrub 2-5 ft. tall. Leaves evergreen, leathery, yellowish green, oval or oblong, 1-2 in. long. Sandy soil. Blooming in spring and summer. Fla. and southern Ga.

Azalea viscosa. Swamp honeysuckle. Flowers white to pink, sticky, 5-lobed, 1 in. across, somewhat 2-lipped, in terminal clusters. Shrub 4-9 ft. tall. Leaves deciduous, oblong or broadened upward, 1-3 in. long. Swamps. Blooming in spring and summer. Fla. to Texas, Ohio, and Me.

FETTERBUSH and STAGGERBUSH (Genus *Pieris* (*Andromeda*))

The three-angled branches, evergreen bevel-edged leaves, and small, rose-colored bell-shaped flowers of fetterbush, *P. nitida*, are seen in widely different locations, for this is one of our most common flowering shrubs of winter and spring. In dry sand it shows a low stunted growth, but in damp places it is sometimes twelve feet tall, and where it is abundant the flowers often scent the air with a faint sour odor. After the nodding flowers fall, the capsules turn and remain upright. The large woody root is dark red in color, and the shrub is locally known as redroot.

Staggerbush, *P. mariana*, begins to open its white



FIG. 23. Tar-Flower
Befaria racemosa

flowers in late winter, when the new leaves appear. This shrub is often infested by a fungus that incites the flowers to rapid and abnormal growth.

Pieris nitida. Flowers white to red, small, cylindrical, in clusters along the stems. Calyx 5-lobed, corolla 5-toothed, stamens 10. Shrub 2-12 ft. tall. Leaves evergreen, shining, elliptic or oval, entire, 1-3 in. long. Swamps, pinelands, and dry sand. Blooming in winter and spring. Fla. to Va. and La.

Pieris mariana. Flowers white, bell-shaped, nearly $\frac{1}{2}$ in. long, clustered, in racemes. Shrub 2-6 ft. tall. Leaves deciduous, oblong or oval, 2-3 in. long. Low grounds. Blooming in spring. Fla. to R. I., Tenn., and Ark.

XOLISMA. MYRTLE (Genus *Xolisma*)

X. ferruginea, locally called myrtle, is a common shrub in many places, and is variable in growth according to location. The leathery leaves are usually very numerous, and are peculiarly scurfy on the lower surface. The tiny globose flowers are sometimes fragrant, and scent the air with a honey-like odor.

The closely allied *X. fruticosa* is also common, and may be distinguished from the former by its leaves, which are less scurfy, and instead of gradually decreasing in size toward the ends of the branches are abruptly smaller. The small flowers are sometimes brownish.

X. foliosiflora, with deciduous leaves, one to three inches long, and small white flowers in terminal leafy panicles, is sometimes infested with galls, which change the leaves to grotesque inflated pouches of pale green tinged with pink.

***Xolisma ferruginea* (Andromeda).** Flowers small, white or cream-color, scurfy, globose, 4-6-lobed, many, clustered along leafy branches. Shrub or small tree. Leaves evergreen, entire, 1-2 in. long, chiefly oval. Sandy soil. Blooming in winter and spring. Fla. to S. C.

HUCKLEBERRY FAMILY (*Vacciniaceae*)

Shrubs. Leaves alternate. Flowers small, 5-lobed, pink or white. Fruit a berry.

HUCKLEBERRIES and BLUEBERRIES (Genera *Vaccinium* and *Gaylussacia*)

From February to June one may hardly walk a mile in the Florida country without finding plants of this family in bloom. A common and easily recognized huckleberry is *Vaccinium nitidum*, a very attractive little evergreen shrub of low bushy growth, with many small, shining, dark green leaves, and many little red-tinged flowers. The edible berries are large and black, and are an aid in distinguishing it from the similar and closely allied *V. Myrsinites*, whose berries are blue. The young foliage of the latter is usually grayish green tinged with purple, and that of *V. nitidum* light green tinged with red. The leaves of both are only one-fourth to one-half an inch long.

A dwarf huckleberry of northern states, *Gaylussacia dumosa*, which spreads through sandy soil by means of underground stems, is common in pinelands. The upright branches, seldom more than a foot in height, bear small, white, bell-shaped flowers, and black berries.

A common northern blueberry, *Gaylussacia frondosa*, whose leaves are minutely dotted with golden resin on the under surface, grows in Florida, but the racemes are sometimes infected with a fungus that causes an abnormal and grotesque growth of the small greenish flowers.

***Vaccinium nitidum*.** Flowers white to red, urn-shaped, small, in short racemes. Stamens 10. Berries black. Shrub 1-2 ft. tall. Leaves evergreen, elliptic, small, minutely toothed. Sandy soil. Blooming in winter and spring. Fla. and Ga.



FIG. 24. Fetterbush
Pieris nitida

Vaccinium Myrsinites. Similar to above species. 1-3 ft. tall. Berries blue. Fla. to N. C. and La.

Vaccinium formosum. Flowers rose-color, $\frac{1}{2}$ in. long, appearing before the leaves. Berries black. Shrub 1-4 ft. tall. Leaves elliptic or oblong, entire, 1-2 in. long. Swampy places. Blooming in late winter and spring. Fla and Ga.

SPARKLEBERRY. FARKLEBERRY (*Batodendron arboreum*
(*Vaccinium*))

This shrub or small tree is very ornamental in bloom, as the small white flowers are borne in a profusion of racemes that suggest those of lily-of-the-valley. The numerous evergreen leaves, one to two inches long, are entire, and are usually broadest near the apex. The berries are black. It blooms in thickets and woods in the peninsula in early spring, and is especially abundant in northern Florida.

BUCKBERRY (*Polycodium caesium* (*Vaccinium*))

Buckberry, locally called gooseberry, a shrub two to five feet tall, is frequently seen in thickets. It bears in spring leafy-bracted racemes of white blossoms in which the corolla is so very short that the ten stamens are left naked, and with their long anthers protrude in a cluster from the flower, instead of being included in the corolla as in other species of the family. The thin oblong or oval leaves are about an inch in length. The berries are greenish.

PLUMBAGO FAMILY (*Plumbaginaceae*)

The cultivated plumbago is often seen about Florida homes, but southern Florida has a wild plumbago, *Plumbago scandens*, which, though less showy, is similar to it.

This innocent appearing plant is known in parts of the West Indies as *herbe du diable*, on account of the blistering effects of the leaves and roots, whose action is similar to that of a European species said to be used by beggars to produce ulcers.

Marsh rosemary, or sea-lavender, *Limonium*, which covers salt marshes with a purple mist, is related to the plumbago, though very different in general appearance, as the leaves are chiefly basal, and the flowering-stems, one to two feet tall, are widely branched and bear innumerable tiny blue, purple, or white flowers.

Plumbago scandens. Flowers white or bluish, tubular below, expanded above, 1 in. or more long, in terminal spikes. Calyx 4-5-lobed, glandular-viscid. Corolla 4-5-lobed, stamens 4 or 5. Capsule slender. Shrubby, erect or reclining, stems 2-4 ft. long. Leaves alternate, 1-4 in. long, narrowed into clasping base. Sandy soil. Blooming in spring and summer. Fla. peninsula.

PRIMROSE FAMILY (*Primulaceae*)

Low herbs of marshy places. Flowers small, 5-lobed. Fruit a roundish capsule. Leaves chiefly basal.

Samolus ebracteatus. Flowers white or pinkish, small, short-tubular below, expanded and 5-lobed above, in terminal racemes. Stems 4-18 in. tall. Leaves alternate, chiefly basal, somewhat fleshy, 1-5 in. long, broadened upward. Marshes, chiefly near the coast. Blooming nearly all the year. Fla. to Texas.

Samolus floribundus. Water pimpernel. Brookweed. Flowers white, tiny, in many racemes. Stems 6-20 in. tall. Leaves 1-4 in. long, light green, chiefly basal. Common in damp ground, especially toward the coast. Fla. to Cal. and northward.

JACQUINIA FAMILY (*Theophrastaceae*)

Shrub or small tree. Leaves evergreen, opposite or whorled, entire. Calyx and corolla 5-lobed, stamens 5. Fruit a few-seeded leathery berry.

JOEWOOD (*Jacquinia keyensis*)

This shrub of extreme southern Florida may be recognized by its yellowish green foliage of shining, somewhat wedge-shaped leaves, one-half to two inches in length, with recurved margins. The fragrant cream-colored flowers, less than half an inch across, are in short racemes, and are followed by globose, pointed fruit, about one-third of an inch in diameter, which are said to be poisonous, as are those of South American species that are used to stupefy fish. Attached to the corolla within, and alternate with its lobes, are five appendages that represent an outer circle of sterile stamens. Joewood is found chiefly near the coast, and blooms in winter.

MYRSINE FAMILY (*Myrsinaceae*)

Shrubs or small trees. Leaves alternate, evergreen, entire. Calyx and corolla 4-5-parted, stamens 4-5. Fruit a small, 1-seeded, black berry.

MARLBERRY. CHERRY (*Ikacorea paniculata* (*Ardisia Pickeringia*))

This very attractive shrub, found chiefly near the coast in the warmer parts of the peninsula, but growing as far north as the Halifax River, has smooth, thick, elliptical leaves, two to six inches long, and small, fragrant, white flowers in many-flowered terminal panicles. Its chief time of blooming is in summer and autumn. The corolla lobes—usually five in number—are strongly recurved, and are marked with minute dark lines and dots. The small globular berries are black and shining.

MYRSINE (*Rapanea guyanensis* (*Myrsine Rapanea*))

Myrsine bears its tiny greenish white flowers on short spurs along the branches. Both calyx and corolla are thickly dotted with reddish brown. This shrub may be identified when not in bloom by the many little black berries borne close to the naked branches, below the leaves. The latter are two to four inches in length, and are broadened upward.

EBONY FAMILY (*Ebenaceae*)

Small tree. Leaves alternate, entire. Calyx and corolla 4-lobed. Fruit yellow, edible, 4-8-seeded, about 1 inch in diameter.

PERSIMMON (Genus *Diospyros*)

In other southern states frosts ripen the persimmons, but below the northern part of the peninsula frosts are happily of rare occurrence, and the sun, instead, takes from the fruit its unspeakable astringency. The peninsula persimmon, *D. Mosieri*, is slightly different from the common *D. virginiana* of the southern states.

The Japanese persimmon is cultivated in Florida for its large and luscious fruit. Foreign trees of this genus furnish valuable ebony.

SAPODILLA FAMILY (*Sapotaceae*)

Shrubs or trees. Sap gummy, often milky. Leaves alternate, entire, evergreen. Flowers small, white or yellowish, 5-lobed, clustered in leaf-axils, stamens 5. Fruit pulpy, usually 1-seeded.

SATINLEAF and MASTIC (Genera *Chrysophyllum* and *Sideroxylon*)

Exotic fruits of this family—sapodilla, mamey-sapote, star-apple, and others—are cultivated in southern Florida,

and are among the many fruits of tropical America that Spanish explorers discovered and praised.

Our native species are less noted, but are of unusual interest. The satinleaf, *Chrysophyllum monopyrenum*, a small tree of southern Florida, has leaves of such remarkable beauty that any description of them is inadequate. These leaves, elliptical or oblong and one to four inches in length, are densely covered on the lower surface with a glistening golden brown pubescence—a copper-colored satin that reflects the light in varying tones, and is in beautiful contrast with the dark, almost bluish green upper surface, which appears as if varnished. The blackish fruit, not quite an inch in length, is as gummy when cut as is the yellow, slightly larger, somewhat plum-like fruit of the mastic, *Sideroxylon mastichodendron*, a large tree, with shining leaves three to six inches long, of oblong or oval shape, and small yellowish flowers, which grows in hammocks in the southern part of the peninsula and on the Keys.

The gummy sap, characteristic of this family and especially noticeable in the mastic, is so abundant in the sapodilla that the tree is a chief source of the chicle used in chewing-gum. Trees of East India genera yield gutta-percha.

SAFFRON PLUM. BUCKTHORN. BLACK HAW (Genus
Bumelia)

Several shrubs or trees of this genus, some of them thorny, are found in Florida, and bloom in small axillary clusters of five-cleft flowers, in which the tiny petals are oddly supplemented by little petal-like appendages. The saffron plum, *B. angustifolia*, of the peninsula and Keys, has somewhat wedge-shaped leaves, about an inch in length, shining above and dull beneath, and blooms in autumn and winter with many tiny flowers that scent

the air with their fragrance. The oblong fruit, half an inch in length, is edible.

The oblong leathery leaves, one to three inches long, of black haw, or chittimwood, *B. lanuginosa*, which blooms in summer, are noticeable because of the dense reddish brown pubescence covering the under surface, and contrasting with the shining green above.

The silver buckthorn, *B. tenax*, which grows chiefly near the coast, but does not extend to the extreme southern part of the peninsula, has leaves that are clothed beneath with a lustrous gray or tawny pubescence.

OLIVE FAMILY (*Oleaceae*)

Trees or shrubs. Leaves opposite. Flowers small, white or green, tubular at base, 4-6-lobed, in clusters along the branches. Stamens 2 or 4. Fruit a small drupe.

WILD OLIVE. DEVILWOOD (Genus *Osmanthus*)

The wild olive is common in Florida woods, and, like its allies the jessamines, lilacs, syringas, and sweet olive, its flowers have an agreeable fragrance. It grows as a handsome shrub or small tree with shining, evergreen, entire elliptical leaves, three to seven inches long, and bears in late winter axillary clusters of tiny whitish flowers, whose four lobes are strongly recurved. Like many other of our native trees it is admirable for ornamental planting, and thrives even on high pineland. *O. americana* has dark purple, olive-like fruit, about half an inch long. The rarer *O. floridana* has slightly larger green or yellowish fruit.

FLORIDA PRIVET (Genus *Adelia* (*Forestiera*))

Several species of this genus grow in the state, and in the peninsula are found chiefly near the coast, though

the hardier species of northern Florida often grow by streams. They are of shrubby growth, with small leaves, and minute greenish flowers which lack petals and are much less noticeable than the black or blue fruit, about one-third of an inch in length, which is often very abundant. *A. segregata* has narrow evergreen leaves, one to two inches long, that are slightly broadened upward. *A. globularis* has leathery oblong leaves, usually less than an inch in length.

LOGANIA FAMILY (*Loganiaceae*)

Woody vine. Leaves opposite, evergreen. Flowers yellow, funnel-shaped, fragrant. Fruit a capsule.
Also: A small weed.

YELLOW JESSAMINE. CAROLINA JESSAMINE (Genus *Gelsemium*)

If that kindly herbalist John Parkinson had known this vine he might have written of it, as he did long ago of the honeysuckle, "although it be very sweet, yet do I not bring it into my Garden, but let it rest in his own place to serve their senses that travel by it, or have no Garden."

Nowhere is the yellow jessamine more beautiful than in thickets and woods, where it runs in tangled profusion over trees and bushes, ornamenting them with its shining leaves, and here and there along its slender stems setting forth midwinter flowers. Fragrant as memories of southern nights, as the romance of southern days, well does it "serve their senses that travel by it."

The roots and bark are poisonous, and are used medicinally. Strychnine is obtained from the Asiatic *Strychnos Nux-vomica*, of the same genus to which the edible Kaffir orange belongs, and notorious arrow-poisons are prepared from others.

Gelsemium sempervirens. Flowers yellow, 5-lobed, 1 in. long or more, from leaf-axils. Stamens 5. Twining woody vine. Leaves entire, pointed, broadest near base, 1-3 in. long. Thickets and woods. Blooming from midwinter to spring. Fla. to Va. and Texas.

Polypremum procumbens. A homely weed forming bristly mats a few inches high of many stiff, 4-angled, branching stems. Leaves opposite, narrow, pointed. Flowers minute, white, 4-lobed. Plants become reddish brown in autumn. Dry soil. Blooming in spring and summer. Fla. to Texas, Mo., and Pa.

GENTIAN FAMILY (*Gentianaceae*)

Herbaceous plants. Leaves opposite. Flowers pink, white, or blue, 4-12-lobed. Fruit a capsule.

MARSH PINK. SABBATIA. SEA STAR (Genus *Sabbatia*)

This beautiful genus is found only in North America, but in no other part of the United States do the starry flowers bloom throughout the year, as they do in Florida. At home in marshy meadows, on sandy lake shores, and in pinelands, they blossom even in midwinter, though far less abundantly than in summer, when acres upon acres of low grounds are bright with the flowers.

The white sabbatias are most often found in pinelands; the pink ones grow in sandy marshes and in the borders of swamps.

Sabbatia grandiflora. Flowers pink, wheel-shaped, nearly 2 in. across, with green and yellow center. Calyx and corolla usually 5-parted, corolla lobes oval or elliptic, stamens as many as lobes. Plants 2-4 ft. tall, slender, branched. Leaves on stems very narrow, 1-3 in. long. Low grounds. Blooming chiefly in spring and summer. Fla.

Sabbatia campanulata. Flowers pink or rose, slightly more than 1 in. across, lobes oblong. Stems 1-2 ft. tall. Leaves oblong or linear, about 1 in. long. Low grounds. Fla. to Mass. and La.

Sabbatia decandra. Flowers deep rose or paler, 2-4 in. across, few, 8-12-lobed. Stems 2-3 ft. tall. Leaves narrow, 1-4 in. long. Borders of ponds and swamps. Fla. to Ga. and Ala.

Sabbatia calycina. Flowers pale pink, 1 in. or less across, few, smaller than leaf-like calyx. Plants 4-15 in. tall. Leaves oblong, 1-2 in. long. Damp shaded places. Blooming from spring to fall. Fla. to Va. and Texas.

Sabbatia Elliottii. Flowers white, nearly 1 in. across, at ends of branches. Stems 1-2 ft. tall, widely branched. Leaves narrow, seldom 1 in. long. Pinelands. Blooming all the year. Fla. to Va.

Sabbatia lanceolata. Flowers white, nearly 1 in. across, in terminal clusters. Stems 1-3 ft. tall, angled. Leaves broadest near base, about 1 in. long. Damp pinelands. Blooming chiefly in spring and summer. Fla. to N. J.

Dasystephana parvifolia. Gentian. Flowers purple or blue, about 2 in. long, funnel-shaped, sessile in few-flowered terminal cluster. Calyx and corolla 5-lobed. Stems 1-2 ft. tall. Leaves broadest near base, about 1 in. long. Damp shaded places. Blooming in fall. Fla. to Va.

Bartonia verna. A common plant of marshy places. The slender stems, 2-10 in. tall, bear near the top a few small, 4-lobed, erect white flowers. The leaves are reduced to minute scales. It blooms chiefly in winter and spring, but also at other seasons. Fla. to Va. and La.

BUCKBEAN FAMILY (*Menyanthaceae*)

Aquatic plants with floating leaves and clusters of small, white, 5-lobed flowers. Fruit a capsule.

FLOATING-HEART (Genus *Nymphoides*)

The clustered flowers of floating-heart seem to spring directly from the leaf itself, as it lies on the water, for both are borne at the top of an elongated stem. The cluster of flowers is slightly below the leaf, and usually is accompanied at its base by a bunch of spur-like tubers.

The larger floating-heart is common in the edges of lakes, and in sluggish streams and ditches, where it grows with other water plants. When not in bloom, the plants may be identified by the small heart-shaped leaves, which are roughened and pitted on the lower surface. (See Plate No. 29.)

Nymphoides aquaticum (Limnanthemum). Flowers white, about $\frac{3}{4}$ in. across, clustered. Calyx and corolla 5-lobed, stamens 5. Leaves heart-shaped, thick, 2-6 in. long. Ponds and streams. Blooming from spring to fall. Fla. to N. J. and Texas.

Nymphoides lacunosum. Flowers slightly smaller than in above species. Leaves only 1-2 in. long. Fla. to La. and northward.

DOGBANE FAMILY (*Apocynaceae*)

Flowers tubular below, expanded and 5-lobed above. Sap milky. Leaves entire.

The most cheerfully ubiquitous flower in the Florida peninsula is the cultivated periwinkle of this family, which, though it escapes from cultivation, is so thoroughly domesticated that it shows no inclination to wander off by itself into the country, but remains near towns, where it blossoms all the year in pink and white.

A native plant of this family, the pretty *Amsonia ciliata*, often seen on sandy roadsides, blooms in loose clusters of starry flowers above delicate foliage of many narrow leaves. A bluish tinge, shading into green, is usually present in the corolla tube.

Several interesting twining or shrubby vines with large flowers, and long seedpods borne in spreading pairs, are found in the southern part of the peninsula. Of these an attractive rubber-vine, *Rhabdadenia biflora*, climbs on trees, and opens fragrant white flowers nearly all the year.

Our cultivated members of this family include the alla-



FIG. 25. *Amsonia*
Amsonia ciliata

mandas, trachelospermum, thevetia, tabernaemontana, and carissa. A poisonous principle is generally present in the dogbane family, as the termination, bane, indicates. The virulent ordeal poison of Madagascar is obtained from certain species, and in Europe the blue periwinkle, which is often planted in our northern states, has such suggestive names as *violette des sorciers*, and flower of death.

The milky sap of several African species forms caoutchouc when evaporated, and that of a few non-poisonous South American species is used as food.

Amsonia ciliata. Flowers white, about $\frac{1}{2}$ in. across, in terminal panicles. Calyx and corolla 5-lobed, stamens 5. Seedpods 3-6 in. long. Stems 1-3 ft. tall, branched. Leaves alternate, many, narrow, 1-3 in. long. Dry soil. Blooming from late winter to fall. Fla. to N. C., Texas, and Ark.

Rhabdadenia biflora. Twining vine, stems long. Leaves opposite, thick, oval or narrow, 2-5 in. long. Flowers white, about 2 in. long, from leaf-axils. Seedpods slender, 5-6 in. long. Wet places near the coast. Southern peninsula Fla.

Rhabdadenia corallicola. Stems erect or spreading, 1-4 ft. long. Leaves 1 in. long or less, margins recurved. Flowers yellow, 1 in. long. Pods 3-4 in. long. Pinelands. Southern peninsula Fla.

Echites umbellata. Twining vine. Leaves oval or broadest near base, 1-3 in. long, margins strongly recurved. Flowers white or greenish, 2 in. long, in axillary clusters. Pods 6-8 in. long. Sandy soil. Southern peninsula Fla.

MILKWEED FAMILY (*Asclepiadaceae*)

Herbaceous plants or vines. Sap milky. Flowers small, 5-parted, in umbels. Seeds flat, generally tipped with silky hairs.

MILKWEED. SILKWEED (Several genera)

Milkweeds are as remarkable as orchids in utilizing insect visitors to carry pollen from flower to flower. Few

cross-pollination devices are more astonishing than those seen in these peculiar flowers, in which the five stamens form a palisade around the flat-topped pistil, a palisade whose only openings are minute slits. An insect alights on the smooth and slippery upper part of the flower, and in struggling for foothold a leg slides into one of these openings, within which is a clip to which pollen masses are attached. When the foot is withdrawn the clip shuts down on the leg, and the insect, willy-nilly, must carry off the clip with the pollen, or, as sometimes happens, leave a leg torn off in the slit. At the next flower visited the same adventure results in the pollen carried by the insect being brought in contact with the stigma, while fresh pollen is fastened on the insect's leg.

The peculiar form of the flowers in the common milkweeds is characteristic of other genera, in various modifications. Within the petals is a short crown of five erect hoodlike processes, each of which in the genus *Asclepias* (but not in our other genera) bears a small incurved horn.

Milkweeds begin to bloom in February in Florida. The most showy of the early species is the butterfly-weed, *Asclepias tuberosa*, also called pleurisy-root from its former use in medical practice. This is followed by the prostrate or spreading *A. humistrata*, with ash-colored flowers, and broad leaves of pale green veined with white and rose, and by the erect *A. tomentosa*, whose many clusters of greenish flowers are set among dark green, wavy-margined leaves. The tall red milkweed, *A. lanceolata*, blooms in summer in marshy places, and other less showy species are found in different locations.

The delicate and attractive *Asclepiodora Feayi* is said to have been used by the Seminoles as a remedy for snake-bites.

Several twining vines of this family grow near the coast—climbing over shrubs, and lying in tangled mats

on the grasses. The milky sap is a clue to their identity. *Philibertia clausa*, an evergreen vine, has conspicuous umbels of white flowers. The unattractive *metastelmas* grow in masses of slender green stems, with narrow leaves, and with umbels of minute flowers sessile in the leaf-axils. In *Seutera* the umbels of green or brownish flowers are stalked.

The name of silkweed is appropriate when the bursting pods set free the seeds, tipped with parachutes of glistening hairs that float them on the breeze. The seedpods open on only one side, and are technically known as follicles.

This family is remarkable in many ways. The milky latex of some species forms caoutchouc, and that of the cow-plant of Ceylon is used as food. Strange, cactus-like forms are shown by a number of South African species, of which the toad-cactus, or carrion-flower, *Stapelia*, is an example, and several genera are epiphytes with peculiar foliage.

ERECT OR PROSTRATE PLANTS (not vines)

***Asclepias tuberosa*.** Flowers orange or reddish, small, in several umbels forming a somewhat flat-topped terminal inflorescence. Calyx small, 5-lobed, corolla 5-parted, lobes reflexed, stamens 5. Seedpods 3-4 in. long. Stems 1-2 ft. tall. Leaves mostly alternate, oblong, 2-6 in. long. Dry soil. Blooming from midwinter to fall. Fla. to Texas and northward.

***Asclepias humistrata*.** Flowers ash-color or pale purple, in stalked globular umbels from axils of upper leaves. Seedpods 4-6 in. long. Stems 1-2 ft. long, prostrate or ascending. Leaves opposite, broad, pale green, 2-6 in. long. Dry sand. Fla. to N. C.

***Asclepias tomentosa*.** Flowers greenish, in many sessile umbels in axils of upper leaves. Stems 1-3 ft. tall. Leaves opposite, many, oblong, 1-3 in. long. Sandy soil. Fla. and Ga.

***Asclepias lanceolata*.** Flowers red, few, in terminal umbels. Stems 1-4 ft. tall. Leaves opposite, few, narrow, 4-10 in. long. Wet grounds. Fla. to N. J. and Texas.

***Asclepias verticillata*.** Flowers whitish, small, in globular umbels. Stems slender, 1-2 ft. tall. Leaves thread-like, 1-2 in. long, in whorls of 3-6. Dry soil. Fla. to Texas and northward.

***Podostigma pedicellata*.** Flowers greenish yellow, nearly $\frac{1}{2}$ in. long, in few-flowered umbels. Stems 6-15 in. tall. Leaves opposite, narrow, 1-2 in. long. Pods hairy, slender, 4-9 in. long. Sandy soil. Blooming from spring to fall. Fla. to N. C.

***Anantherix connivens*.** Flowers greenish white, fully $\frac{1}{2}$ in. long, in several few-flowered umbels. Divisions of crown relatively long, incurved. Stems 1-2 ft. tall. Leaves opposite, oblong, 1-3 in. long. Wet pinelands. Blooming in summer. Fla. to Ga. and Ala.

***Asclepiodora Feayi*.** Flowers white or tinged with lavender, star-shaped, about $\frac{1}{2}$ in. across, in few-flowered terminal umbels. Stems very slender, 6-18 in. tall. Leaves opposite, very narrow, 1-4 in. long. Pinelands. Blooming in spring and summer. Fla.

***Vincetoxicum pubiflorum*.** Flowers brownish, small, wheel-shaped, minutely hairy, in few-flowered umbels in leaf-axils. Stems spreading or prostrate, 8-20 in. long. Leaves opposite, heart-shaped at base, about 1 in. long. Sandy soil. Blooming from spring to fall. Fla. and Ga.

TWINING VINES

***Philibertella clausa*.** Flowers white, slightly fragrant, $\frac{1}{2}$ in. or more across, many, in stalked umbels from leaf-axils. Seedpods 2-3 in. long. Leaves opposite, somewhat fleshy, oblong or broadest near base, pointed, 1-3 in. long. Thickets. Blooming all the year. Southern Fla.

***Metastelma Blodgettii*.** Flowers minute, whitish, in sessile umbels in leaf-axils. Pods very slender, 1-2 in. long. Stems delicate. Leaves opposite, narrow, less than $\frac{1}{2}$ in. long. Sandy soil. Blooming chiefly from spring to fall. Southern Fla.



FIG. 26. Milkweed
Asclepias tomentosa

Metastelma scoparium. Similar to above species, but leaves are 1-2 in. long. Stems often become leafless. Fla. to S. C.

Seutera palustris. Flowers small, greenish brown or purplish, in stalked umbels from leaf-axils. Pods slender, 1-2 in. long. Leaves narrow, smooth, somewhat fleshy, 1-3 in. long. Near the coast. Blooming from spring to fall. Fla. to N. C. and Texas.

MORNING GLORY FAMILY (*Convolvulaceae*)

Twining or trailing plants. Leaves alternate. Flowers from leaf-axils, petals united, stamens 5. Fruit a capsule.

From Palm Beach and the Okeechobee region southward the most common wild flowers in winter—aside from the weeds—are the morning glories and their beautiful relative the moonflower. Twining over underbrush, and climbing high upon shrubs and trees, they grace their accommodating supports with additional tapestry of flowers and leaves while northern trees bear the cold ornament of snow.

One of the most common in this part of the state, *Ipomoea cathartica*, produces an unending supply of purplish pink morning glories. Here, also, the moonflower, with the characteristic pallor and fragrance of night bloomers, grows in profusion in thickets and swamps, often climbing the trees and opening large flowers from the topmost branches.

Near the coast in the southern part of the peninsula the prostrate *Jacquemontia* spreads in matted growth, and bears a quantity of small white or violet flowers.

The adventurous *Ipomoea littoralis* opens white, yellow-throated flowers on ocean beaches, in danger from waves and from drifting sand. Another seaside morning glory, the cosmopolitan *Ipomoea pes-caprae*, is conspicuous even when not in bloom, for it stretches stout rope-like stems, well anchored by roots, far over the sands, and bears

many broad, long-stalked leaves that open like a book. The heavy stems often have the singular habit of growing straight from the dunes to the water's edge, and lie in parallel lines across the sand. It is also occasionally found in sandy soil in the interior.

From spring to fall, in many locations, are found the trailing brewerias—*Breweria grandiflora*, whose beautiful light blue flowers well merit the specific name, and several smaller species with slender prostrate stems, and little white morning glory flowers, only half an inch to an inch across.

Silky plants of *Evolvulus*, with small and extremely delicate flowers, and of spreading growth, bloom during spring and summer. Like the brewerias, the flowers are distinguished from others of this family in having two styles, instead of one.

The cultivated sweet potato is a well-known morning glory, *Ipomoea Batatas*. And parasitic dodders of the genus *Cuscuta*, known both as love-vine and as hell-weed, are aberrant members of the family.

FLOWERS LARGE (more than one inch across)

Calonyction aculeatum (Ipomoea Bona-nox). Moonflower. Flowers white, fragrant, opening at night, 4-5 inches across, tubular below, expanded above, tube slender, 4-5 in. long. Twining vine. Leaves broadest near base, pointed, 2-6 in. long. Swamps and damp thickets. Blooming all the year. Southern Fla.

Ipomoea littoralis. Flowers white, funnel-shaped, 2-3 in. across, throat yellow. Stems creeping. Leaves fleshy, more or less deeply lobed, 1-2 in. long. On sea beaches. Fla. to S. C. and Texas.

Ipomoea pandurata. Flowers white, about 3 in. across, throat purple. Seeds woolly on angles. Stems trailing or twining. Leaves broad or fiddle-shaped, 1-4 in. long. Root very large. Dry soil. Fla. to Texas, Conn., and Mich.

***Ipomoea dissecta*.** Flowers white, 1-2 in. across, throat purple. Stems twining, usually hairy. Leaves roundish, 5-7-parted, coarsely toothed, 2-4 in. wide. Dry soil. Fla. to Ga. and Texas.

***Ipomoea pes-caprae*.** Flowers pinkish purple, about 2 in. across. Stems stout, creeping. Leaves smooth, thickish, 2-4 in. long, often broader than long, notched at apex. Chiefly on the coast. Fla. to Ga. and Texas.

***Ipomoea sagittata* (*I. speciosa*).** Flowers purple, 2-3 in. across. Stems slender, twining. Leaves 1-4 in. long, narrowly arrow-shaped, basal lobes long. Sandy soil. Fla. to Texas and N. C.

***Ipomoea cathartica* (*Pharbitis*).** Flowers pinkish purple, 2-4 in. across. Stems twining. Leaves broad, often 3-lobed, 2-4 in. long. Thickets. Blooming all the year. Southern Fla.

***Convolvulus repens*.** Flowers white, about 2 in. across. Calyx enclosed by 2 bracts. Stems trailing or twining. Leaves arrow-shaped, soft, 2-3 in. long. Dry soil. Fla. to Texas, Va., and N. D.

***Breweria grandiflora*.** Flowers light blue, 3-4 in. across. Stems trailing. Leaves oblong or oval, 1-2 in. long. Sandy soil. Blooming in spring and summer. Fla. peninsula.

FLOWERS SMALL (one inch across or less)

***Breweria angustifolia*.** Flowers white, nearly 1 in. across. Stems trailing. Leaves very narrow, 1-3 in. long. Dry soil. Fla.

***Breweria villosa*.** Flowers similar to above. Calyx and leaves silky. Leaves oblong or linear, 1-3 in. long. Dry soil. Fla.

***Evolvulus sericeus*.** Flowers white or blue, small. Flower-stalks short. Plants silky, stems 4-12 in. long. Leaves narrow, 1 in. long or less. Sandy soil. Blooming from spring to fall. Fla. and Ga. to Ariz.

***Evolvulus alsinoides*.** Flowers small, on stalks as long as or longer than leaves. Stems many, spreading, silky, 1-2 ft. long. Leaves oblong, small. Sandy soil. Fla. to Texas.

Jacquemontia pentantha. Flowers blue or violet, nearly 1 in. across, in clusters. Stems trailing or twining. Leaves oblong or broadest near base, pointed, 1-2 in. long or less. Sandy soil near the coast. Southern Fla.

Jacquemontia reclinata. Flowers white or bluish, 1 in. across, in clusters. Stems prostrate or ascending. Leaves oblong or roundish, 1 in. long or less, minutely hairy. Near the coast. Southern Fla.

Dichondra carolinensis. Small creeping plant with little roundish leaves, and small, greenish, 5-lobed, solitary flowers in leaf-axils. Low grounds. Blooming all the year. Fla. to Va. and Texas.

WATER-LEAF FAMILY (*Hydrophyllaceae*)

Herbaceous. Leaves alternate. Flowers blue, wheel-shaped.

NAMA (Genus *Nama*)

The intense color of the flowers renders this plant conspicuous, even when overtopped by grasses and other marsh plants. Long stamen filaments and styles of the same bright blue as the petals add to the brilliancy of the flowers.

Nama corymbosum. Flowers blue, nearly 1 in. across, 5-lobed, in terminal clusters. Stamens 5. Stems 1-2 ft. tall. Leaves oblong, 1-2 in. long. Low grounds. Blooming in summer. Fla. to S. C.

PHLOX FAMILY (*Polemoniaceae*)

Herbaceous plants. Flowers 5-lobed, white, purple, pink, or red, in terminal inflorescence. Fruit a capsule.

PHLOX (Genus *Phlox*)

Several wild flowers introduced from western states have found Florida's soil and climate so stimulating that

they have spread rapidly. None of these blooms in greater profusion than Drummond's phlox, from which the annual garden phloxes are derived. Neglected grounds and waysides in many localities are gay with the many-hued flowers, which in southern Florida begin to bloom in mid-winter, and in the central part of the state in early spring, covering the earth with a carpet of living color, in which pink, lavender, magenta, red, and white blend in brilliant harmony.

Phlox Drummondii. Flowers white to purple and red, tubular below, expanded and 5-lobed above, not quite 1 in. across, in terminal clusters. Calyx tubular, 5-cleft, stamens 5. Plants 6-12 in. tall. Leaves alternate, broadest at base or oblong, 1-2 in. long. Dry soil. Fla. and Texas.

Phlox Hentzii. Flowers pale purple or white. Stems 6-15 in. tall. Leaves opposite, often clustered, thread-like, less than 1 in. long. Sandy soil. Blooming in spring. Fla. to N. C.

STANDING CYPRESS. *GILIA* (Genus *Gilia*)

This is one of our gayest midsummer flowers, rivaling the red lily in color, and extravagantly prodigal of bloom. It is found less frequently in the interior than near the coast, where its plume-like growth, with many finely cut leaves and many scarlet and yellow flowers, is seen on roadsides and elsewhere. This very attractive flower, which is sometimes cultivated in gardens, is representative of a large and interesting genus whose species are abundant in western North America.

Gilia rubra. Flowers scarlet or orange, dotted with darker color, funnel-shaped, 1 in. or more long, in long, narrow panicles. Stamens 5. Stems 2-5 ft. tall. Leaves alternate, of thread-like divisions. Sandy soil. Blooming in summer. Fla. to S. C., Texas, and Ark.

NIGHTSHADE FAMILY (POTATO FAMILY)
(*Solanaceae*)

Herbaceous plants and shrubs. Flowers yellow, lavender, or white, equally 4-5-lobed, stamens 4-5. Leaves alternate.

SOLANUMS (Genus *Solanum*)

If one will examine attentively a flower of the common Irish potato (a *Solanum*) it will prove an aid in identifying our more common plants of this family, since the flowers of our wild solanums are formed on the same plan.

The genus is large, and great diversity is shown in the species. The common nightshade of northern states, *S. nigrum*, with small white flowers and black berries, grows in waste places, as do the coarse prickly weeds known as horse nettles, which bear conspicuous red or orange berries. Tall, shrubby solanums are found in thickets of southern Florida, and exotic vines of this genus, with large clusters of blue or light purple flowers, ornament many Florida homes.

The potato, tobacco, eggplant, and tomato are useful members of this family, which includes, also, such poisonous plants as deadly nightshade and datura. The latter is said to have been used of old by priests and wizards to produce the delirium mistaken for inspiration. Among cultivated ornamental plants of this family are petunias, solandras, solanums, the night-blooming jessamine with fragrant green flowers, and the showy datura known as angels' trumpet, which is a glorified relative of the despised jimson (Jamestown) weed.

***Solanum bahamense*.** Flowers pale purple, nearly $\frac{1}{2}$ in. across, in clusters near leaf-axils. Berries red, small. Shrub 2-6 ft. tall. Leaves oblong, 2-5 in. long, rough. Sandy soil. Blooming all the year. Southern Fla.

Solanum verbascifolium. Flowers whitish. Shrub. Leaves 5-12 in. long, oblong or broadest near base, densely covered with short hairs. Sandy soil. Southern Fla.

Solanum aculeatissimum. Horse nettle. Flowers white, $\frac{1}{2}$ in. across, in few-flowered clusters. Berry orange, 1 in. or more in diameter. Plants 1-2 ft. tall, prickle-armed. Leaves 2-4 in. long, toothed or lobed, broadest near base. Waste places and sandy soil. Blooming all the year. Fla. to N. C. and Texas.

Solanum sisymbriifolium. Flowers similar to above species. Berries reddish, 1 in. or less in diameter. Plants 1-2 ft. tall, prickle-armed. Leaves 3-8 in. long, deeply lobed or parted. Waste places. An introduced weed. Gulf States.

GROUND CHERRY (Genus *Physalis*)

Several species of this genus grow as weeds in cultivated grounds and on roadsides, and are easily identified by their nodding, pale yellow, usually solitary flowers, and their peculiar fruit—a berry enclosed in the enlarged calyx, which becomes a thin inflated sac. The strawberry tomato, or Jerusalem cherry, of this genus is cultivated for its fruit.

Physalis arenicola. Flowers pale yellow, darker in throat, open bell-shaped, nodding, less than 1 in. long, axillary. Berry enclosed in enlarged calyx. Stems 6-16 in. tall. Leaves broadest near base, 1-3 in. long. Sandy soil. Blooming all the year. Fla.

CHRISTMAS BERRY. BOX-THORN (Genus *Lycium*)

This small, thickly branched shrub, with many short, narrow, fleshy leaves, grows in borders of salt marshes and in groups near the beach. The small purple flowers are sometimes very numerous, but are less conspicuous than the oblong or roundish red berries, which vary in size as well as in abundance in different localities.

Lycium carolinianum. Flowers purple or lavender, small, 4-cleft, in leaf-axils, stamens 4. Shrub 1-5 ft. tall. Leaves fleshy, clustered, narrow, less than 1 in. long. Berry red. Near the coast. Blooming chiefly from spring to fall. Fla. to S. C. and Texas.

RED PEPPER (*Capsicum frutescens*)

This little red pepper, found in the borders of hammocks and thickets in southern Florida, grows from one to two feet tall, with small white flowers, alternate pointed leaves, and oblong red berries nearly half an inch long. Any doubt about the identity of this plant is removed by a taste of its red fruit, which speedily bites back when bitten.

BORAGE FAMILY (*Boraginaceae*)

Herbaceous plant. Flowers tubular, greenish. Leaves alternate.

FALSE GROMWELL (Genus *Onosmodium*)

This winter-blooming plant of dry soil shows a decorative form in its curved inflorescence, which is fringed by the long styles protruding from the greenish flowers. It frequently appears in cleared land that has been neglected. The foliage is roughened with short stiff hairs, as in many other plants of this family.

The range of the northern *Lithospermum Gmelini*, with orange-yellow flowers, extends into northern Florida.

The forget-me-not, *Myosotis*, whose older name of scorpion-grass referred to the curved tips of the racemes, is one of the most widely-known flowers of this family.

Onosmodium virginianum. Flowers yellowish green, tubular, 5-lobed, nearly $\frac{1}{2}$ in. long, in curved, terminal racemes. Calyx 5-lobed, stamens 5. The fruit is 4 white nutlets in

base of calyx. Stems 1-2 ft. tall. Leaves oblong or oval, 1-4 in. long. Sandy soil. Blooming in winter and spring. Fla. to Mass. and La.

HELIOTROPE FAMILY (*Heliotropiaceae*)

Flowers small, 5-lobed, in curved 1-sided spikes or racemes. Fruit separates into 2 or 4 nutlets. Leaves alternate.

WILD HELIOTROPES (Genus *Heliotropium*)

Heliotropes are found in Florida, both as homely weeds of waste places, and as attractive wild flowers of the open country. One of the latter, *H. polyphyllum*, grows in such profusion that prairies in the southwestern part of the peninsula are whitened by its bloom in early spring. The golden yellow flowers of *H. Leavenworthii*, which grows chiefly in small colonies near the southeastern shores, are seen in winter as well as summer.

A shrub, *Tournefortia*, with short flowering spikes similarly curved at the tips, and with an abundance of soft gray foliage, grows on sea beaches, and often takes fantastic forms.

***Heliotropium Leavenworthii*.** Flowers bright yellow, small, in curved terminal racemes. Calyx 5-lobed, stamens 5. Stems 6-20 in. tall. Leaves narrow, hairy, many, seldom 1 in. long. Plant perennial. Sandy soil. Southern Fla.

***Heliotropium polyphyllum*.** Characteristics similar to above species. Flowers white with yellow throat. Fla.

***Heliotropium parviflorum*.** Flowers white, tiny. Spikes slender, 2-6 in. long. Stems 1-2 ft. tall. Leaves elliptic, short-stalked, 1-2 in. long. Annual. Blooming all the year. Southern Fla.

***Tournefortia gnaphaloides*.** Flowers whitish, small, in short, curved, clustered, terminal spikes. Shrub 2-4 ft. tall, densely silky. Leaves narrow, many, 2-4 in. long. On the coast. Blooming all the year. Southern Fla.

VERVAIN FAMILY (*Verbenaceae*)

Flowers small, 4-5-lobed, in clusters or spikes. Stamens 2 or 4. Leaves usually opposite. Fruit pulpy or of 2 or 4 nutlets.

VERBENA (Genus *Verbena*)

Our larger verbenas resemble garden verbenas in their flat-topped spikes of lavender or purple flowers, only a little smaller in size than the cultivated varieties. These verbenas are more common toward the coast, where they lie in flowery mats on the dunes, or grow upright in low thickets. *V. carolinensis*, common in the interior, differs from these in its very narrow spike of smaller flowers.

***Verbena maritima*.** Flowers purplish, tubular below, expanded and 5-lobed above, $\frac{1}{2}$ in. across, in many-flowered spikes. Stamens 4. Stems spreading, 1-2 ft. long. Leaves wedge-shaped, about 1 in. long, toothed or lobed. Chiefly near the coast. Blooming all the year. Fla. peninsula.

***Verbena Lambertii*.** Flowers light purple. Stems 1-3 ft. long, often erect. Leaves 1-3 in. long, broadest near base, deeply toothed or lobed. Sandy soil and swampy places. Blooming all the year. Fla. to Tenn., Texas, and Ark.

***Verbena carolinensis*.** Flowers variously colored, white, pink, or bluish, very small, in slender spikes. Stems 6-30 in. tall. Leaves oblong, toothed, 1-4 in. long. Dry soil. Blooming in spring. Fla. to Va.

FOG-FRUIT (*Lippia nodiflora*)

This plant of low growth, with compact stalked heads, less than one-half inch long, of minute bluish flowers, is common on river banks and other damp places, where the creeping stems form extensive mats. The opposite leaves, one-half to one inch long, are broadened upward, and are shallowly toothed near the apex. A related species is used on lawns in California and in southern Europe as a substitute for grass.

ABENA (Genus *Abena*)

This odd plant, with coarse purplish stems, bears quill-like spikes whose dark blue flowers stretch out from cavities in the thick flowering-stem. A small bract closes the cavity in which the bud develops, and remains in front of the ripening capsule.

Abena jamaicensis. Flowers dark blue or purple, small, in quill-like spikes 6-18 in. long. Stamens 2. Stems 1-4 ft. tall. Leaves usually opposite, oblong or oval, toothed, 1-4 in. long. Sandy soil. Blooming all the year. Southern Fla.

LANTANA (Genus *Lantana*)

Lantanas, introduced from tropical America, are so thoroughly naturalized in Florida that they have become weeds in many places. The most common is *L. Camara* and its varieties, which differ in habit of growth and in color of flowers. They are strong-scented shrubby plants, usually prickly, and have opposite, toothed, rough leaves, two to five inches long, and compact variegated clusters of yellow or orange flowers that change to saffron, purple, or red. The black fruit is said to be edible. The vine-like *L. Sellowiana* has long stems, which are not prickly, many small clusters of purple or lilac flowers, and small leaves. *L. involucrata*, a shrub with small, involucrate heads of white or pale purple flowers and bluish fruit, grows in southern Florida.

Other exotic plants of this family that are seen in Florida gardens are the clerodendrons, the lavender tree, or chaste tree (*Vitex*), petraea, and the duranta, or golden dew-drop.

FRENCH MULBERRY. SPANISH MULBERRY (Genus *Callicarpa*)

This shrub, whose specific name is in contrast with its common name, is most conspicuous in autumn and early

winter, when the pale flower-clusters of spring have given place to shining violet or purple berries, borne close against the stem. These berries—which are not true berries but are drupes—are a favorite food of mocking birds.

Callicarpa americana. Flowers pale purple or bluish, small, 4-lobed, clustered in leaf-axils. Calyx 4-lobed, stamens 4. Fruit small, violet or purple. Shrub 3-8 ft. tall. Leaves opposite, oval, stalked, toothed, 3-6 in. long. Dry soil. Blooming in spring and summer. Fla. to Va., Texas, and Mo.

BLACK MANGROVE. HONEY MANGROVE (*Avicennia nitida*)

The black mangrove is not related to the true mangrove (*Rhizophora*), but is an evergreen tree that grows on the coast, often with other mangroves and, like them, aids in land-formation. Its long horizontal roots spread extensively, and from them strange upright “breathing stems” rise.

The oblong leaves, two to three inches long, are smooth and glossy on the upper surface, and are paler and minutely but densely downy beneath. The small, five-lobed, white flowers, with four stamens, are in short spikes, and are very silky. They bloom in summer, and are a chief source of the highly prized mangrove honey.

The seed in the leathery oblong fruit, which is oblique and is from one to two inches long, begins to germinate while still on the tree. The fallen fruit floats on the water, buoyed by the spreading cotyledons.

MINT FAMILY (*Labiatae* (*Lamiaceae*))

Herbaceous or shrubby plants. Leaves opposite, usually aromatic. Stems 4-angled. Flowers 2-lipped, stamens 2 or 4. The fruit is 4 nutlets in base of calyx.

When in doubt, taste your plant, is an excellent rule to follow. The intense bitter of the hollies, the peculiar taste

of many composites, the spicy pungency of the carrot family, and the aromatic flavor of many mints are family characteristics that help the amateur botanist to guess the relationship of a new plant.

Each family has special characteristics, which in diversity of form run through the species. In the mints the differences in the shape of the irregular corollas, in the calyx, and in the stamens are of especial interest. The stamens are generally in two pairs of unequal length, but in several genera one pair is lacking or abortive.

Florida has many species of this large family. The majority grow only in dry soil, and many of them are found only in the far South. Red sage and red basil, blue sage and wild savory are attractive plants that ornament many places in Florida.

Different species of mint are used in medicine, flavoring, and perfume, and notwithstanding their tragic origin—when Proserpine, from jealousy, changed the daughter of Cocytus into a mint—it was long ago declared that their chief virtue was “to procure a cheerful and merry heart.” Sage was praised as “*Salvia salvatrix, Naturae conciliatrix.*”

KEY TO THE MINT FAMILY

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Teucrium Nashii. Germander. Flowers pinkish, about $\frac{1}{2}$ in. long, upper lip very short, many, in spike-like inflorescence. Stamens 4. Stems 2-5 ft. tall. Leaves narrowly oblong, 2-6 in. long, paler beneath, toothed. Damp places. Blooming from spring to fall. Fla. to Miss.

Trichostema dichotomum. Blue curls. Flowers blue, small, nearly equally 5-lobed, 1-3 together terminating branches. Stamens 4, blue, long. Plants 1-4 ft. tall, branched, balsamic scented. Leaves oblong, 1-3 in. long, entire. Dry soil. Blooming in summer and fall. Fla. to Texas, Ky., and Me.

SKULLCAP (Genus *Scutellaria*)

This genus is easily identified by the crest, or protuberance, on the upper part of the two-lipped calyx, which closes while the seeds are ripening but later gapes like an open mouth. The upper lobe finally falls, leaving the lower lobe holding the small nutlets.

Several of our species have handsome flowers, and are attractive in cultivation.

Scutellaria arenicola. Flowers blue, 1 in. long, in terminal racemes, upper lip arched. Calyx 2-lipped, crested. Stamens 4. Plants 6-20 in. tall. Leaves oval or elliptic, 1 in. long or less, toothed. Dry soil. Blooming from spring to fall. Fla.

Scutellaria integrifolia. Flowers similar to above species. Lower leaves broad, stalked, toothed, upper leaves narrow, entire. Dry soil. Fla. to Texas, Ohio, and Mass.

Scutellaria multiglandulosa. Flowers pale blue, nearly 1 in. long. Plants 4-12 in. tall, glandular-pubescent. Leaves oblong or linear, about 1 in. long, often toothed, sessile or nearly so. Pinelands. Blooming in spring. Fla. and Ga.

FALSE DRAGON-HEAD (Genus *Physostegia*)

False dragon-head, or obedient plant as it is sometimes called, since the pressure of a finger suffices to change the position of a flower on the stalk, somewhat resembles a pentstemon in its general appearance. The attractive flowers are common in low pinelands, and vary in color from pink to purple.

Physostegia denticulata. Flowers pink or purplish dotted with darker color, 1 in. long, in racemes. Stamens 4. Plants 1-3 ft. tall. Leaves oblong, thickish, 1-4 in. long, entire or toothed, small and few above. Damp grounds. Blooming from spring to fall. Fla. to Va. and Texas.

LION'S-TAIL (*Leonotis nepetaefolia*)

The shrubby cultivated lion's-tail, or lion's-ear, with conspicuous globular clusters of hairy red and orange flowers at intervals along the stems, has a smaller but similar relative which grows as an annual in waste places in the South.

The narrow flowers, with a long upper lip and short lower lip, are nearly an inch long, and have four stamens. They are massed in a few dense whorls, one to two inches in diameter, around the stems. The teeth of the peculiar two-lipped calyx are sharp-pointed, and after the flowers fall the whorls are extremely spiny, like large burs. The long-stalked, round-toothed leaves, one to four inches long, are broadest near the base, and are intensely bitter.

HEDGE HYSSOP (Genus *Stachys*)

Though this is not an especially noticeable plant, it is remarkable for the crisp edible tubers borne on the roots.

These are elongated and irregularly cylindrical in shape, and may be eaten raw or cooked. A Chinese species of this genus has long been cultivated for its edible tubers.

Stachys floridana. Flowers pale purple, barely $\frac{1}{2}$ in. long, whorled, in terminal inflorescence, lower lip larger than upper, 3-lobed. Stamens 4. Stems 6-18 in. tall. Leaves stalked, oblong or broadest near base, about 1 in. long, round-toothed. Sandy soil. Blooming in spring and summer. Fla.

SAGE (Genus *Salvia*)

Among the many cross-pollination devices, by means of which flowers burden visiting insects with pollen, sages have a most interesting method. Several species of sage are common in Florida, and this device is easily seen by examining a flower. The two stamen filaments bear anthers like delicate hammers, whose curved handles are swung, each by the middle, over the entrance to the nectar. An insect alights on the platform offered by the lower lip of the corolla, puts his head inside the flower, pushes against the handle of the hammer, and down comes the pollen-loaded head of the hammer on his back, sprinkling the pollen exactly where it will be brought against the stigma of the next flower visited.

The brilliant *S. coccinea* follows the season northward from South Florida, where its red flowers begin to bloom in midwinter. It is most abundant near the coast, as is also the bluish purple, *S. lyrata*, whose leaves are often blotched with darker color. The tall *S. azurea*, bluest of our autumn flowers, lingers into early winter.

Salvia coccinea. Flowers red, about 1 in. long, in terminal inflorescence 4-9 in. long. Stamens 2. Plants 1-2 ft. tall. Leaves stalked, broadest at base, 1-2 in. long, toothed. Sandy soil. Blooming from midwinter to fall. Fla. to S. C. and Texas.

Salvia azurea. Flowers blue or white, about $\frac{1}{2}$ in. long, lower lip broad, notched. Stems 2-4 ft. tall. Leaves narrow,

1-4 in. long, entire or toothed. Sandy soil. Blooming in summer and fall. Fla. to S. C. and Texas.

Salvia lyrata. Flowers bluish purple, 1 in. long, in terminal inflorescence 4-15 in. long. Stems 6-30 in. tall. Leaves chiefly basal, oblong, 3-8 in. long, lobed or toothed. Dry soil. Blooming from midwinter to fall. Fla. to N. J., Texas, and Mo.

Monarda punctata. Horse mint. Flowers yellowish dotted with purple, nearly 1 in. long, in dense clusters surrounded by leaflike bracts colored pink, purple, and white. Stamens 2. Plants 1-3 ft. tall. Leaves oblong or broadest near base, 1-3 in. long, slightly toothed, pubescent, scented. Dry soil. Blooming in summer and fall. Fla. to N. Y., Texas, and Minn.

CONRADINA (Genus *Conradina*)

These attractive mints are identified by the peculiar form of the flower, whose tube is bent upward at a sharp angle. They are widely branched shrubs, with many short narrow leaves, and bloom abundantly in winter, as well as at other seasons.

C. grandiflora, recently named by Dr. John K. Small, is found chiefly near the East Coast from Cocoa southward. It is from two to six feet tall, and bears handsome lavender flowers, spotted with magenta, in small clusters at the ends of the branches. The narrow leaves are whitened beneath with minute hairs.

C. canescens, of low, compact growth, and with smaller flowers, about one-half inch long, is found from Tampa northward along the coast.

Conradina puberula. Flowers pale purple, spotted, about $\frac{1}{2}$ in. long, in small clusters in axils of upper leaves. Stamens 4. Leaves needle-like, often clustered, 1 in. long or less. Sandy soil. Blooming all the year. Fla.

WILD SAVORY. PENNYROYAL (Genus *Pycnothymus*)

This fragrant shrubby mint, found only in Florida, is abundant in dry pinelands in many places, and is quickly

recognized by its low growth of woody stems, evergreen needle-like leaves, less than half an inch long, and dense, oblong, silky heads of little pale purple flowers spotted with darker color on the lower lip. The odor of the whole plant is similar to pennyroyal, and the plant is locally known by that name.

Pycnothymus rigidus (Satureia). Flowers pale purple, small, in dense cylindrical spikes about 1 in. long. Stamens 4. Stems shrubby, spreading, 10-30 in. long. Leaves needle-like, short, many. Sandy soil. Blooming all the year. Fla.

MICROMERIA (Genus *Micromeria*)

This creeping plant, commonly but incorrectly called pennyroyal because of its fragrance, grows on muddy banks of streams, and is the only Florida representative of a pungently flavored genus whose species are most abundant in the Mediterranean region, where the sun's warmth seems stored in warmly perfumed herbage. The flowers, only one-fourth of an inch long, are on slender pedicels longer than the leaves, which are less than one-half inch long.

Micromeria Brownei. Flowers purplish, small, solitary from leaf-axils. Stamens 4. Stems usually creeping, 6-15 in. long. Leaves roundish, small, short-stalked. River banks and damp places. Blooming in spring and summer. Fla.

BASIL. CALAMINTH (Genus *Clinopodium*)

The red basil rivals the red sage in the intense color of its flowers, but is easily distinguished from the sage by its little leathery leaves, only one-fourth to three-fourths of an inch long. The flowers are longer than those of the sage, and the yellowish throat is sometimes spotted with dark red. It is a decidedly ornamental little shrub, which grows in the driest sand, and is sometimes seen on roadsides.

The smaller *C. Ashei*, with lavender flowers half an inch

long, and many little leathery leaves less than half an inch in length, grows in dry sand in the interior of the peninsula, and has a fragrance suggestive of ripe fruit.

Clinopodium coccineum. Flowers red, $1\frac{1}{2}$ in. long, solitary or clustered in axils of upper leaves. Stamens 4. Plants shrubby, 1-3 ft. tall. Leaves small, leathery, sessile, entire, usually broadened upward. Sandy soil. Blooming from spring to fall. Fla. to Ala.

Clinopodium Ashei. Flowers lavender, small, solitary in leaf-axils. Plants shrubby, 4-20 in. tall, minutely hairy. Leaves small, leathery, sessile, elliptic, but margins are recurved. In sand. Blooming in spring and summer. Fla. peninsula.

BITTERMINT (Genus *Mesophaerum*)

Coarse plants of this genus crowd their tiny flowers in dense clusters, which after the seeds ripen remain on the dry stems. The corolla, barely one-fourth of an inch long, is of peculiar form, as the lower lobe is dipper-shaped. The toothed, stalked leaves are broadest near the base, and are intensely bitter.

Mesophaerum rugosum. Flowers small, white or purple, in small, stalked heads from leaf-axils. Heads are surrounded by bracts. Stamens 4. Plants 2-4 ft. tall. Leaves 1-4 in. long, tapering into leaf-stalk. Low grounds. Blooming in summer and fall. Fla. to N. C. and Texas.

Mesophaerum mutabile. Flowers in dense clusters forming terminal raceme-like panicles. Stems 2-5 ft. tall. Leaves 1-3 in. long. Sandy soil. Blooming from spring to fall. Fla.

FIGWORT FAMILY (*Scrophulariaceae*)

Herbaceous plants. Flowers more or less irregularly 4-5-lobed. Stamens 4 or 2. Fruit a capsule.

The most beautiful Florida flowers of this family are the rose-colored gerardias that bloom in low pinelands in autumn.

A peculiarity of several genera whose stamens are in pairs is that the anthers of opposite pairs are pressed tightly together in such a way that the pollen is kept from falling until a visiting insect, pushing against the filaments of the stamens in his search for nectar, separates the anthers and releases a shower of pollen, which falls on the insect's back in the right position for cross-pollinating the next flower visited, when the pollen is brushed off on the stigma.

In northern fields and woods mullein, painted-cup, chelone, and veronica represent this family, which includes among cultivated plants the snapdragons, foxgloves, calceolarias, russelia, or coral plant, and others.

KEY TO THE FIGWORT FAMILY

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TOAD-FLAX (Genus *Linaria*)

Two similar species of this genus bloom in winter in sandy soil, often growing by thousands in waste grounds,



FIG. 27. False Foxglove
Dasystema pectinata



where above short, prostrate, basal branches the slender, erect flowering-stems bear many small, irregular, blue or purple flowers, about one-fourth of an inch long.

L. canadensis, which is so abundant in many other states that acres are colored by the small flowers, is common through the greater part of Florida, but in the peninsula its place is often taken by *L. floridana*, whose flowering-stalks stand out from the stem, instead of being erect and pressed against it as are those of *L. canadensis*.

Linaria canadensis. Flowers blue and white or purple and white, small, in terminal raceme. Corolla unequally 5-lobed, spurred at base, stamens 4. Stems 6-24 in. tall. Leaves alternate, narrow, 1 in. long or less, those of basal branches broad and short. Sandy soil. Blooming in winter and spring. Fla. to Texas and northward.

Linaria floridana. Similar to above species. Different in its minutely hairy stems, longer and spreading flower-stalks, and shorter spur on the corolla. Sandy soil. Fla and Ala.

PENTSTEMON. BEARD-TONGUE (Genus *Pentstemon*)

A fifth stamen is present in the flowers of this genus, but it is sterile, and instead of bearing an anther is, in many species, so noticeably bearded that it has given rise to the common name of beard-tongue. The flowers of our wild pentstemons are similar to those of the cultivated species, though smaller in size. The pretty *P. multiflorus*, with panicles sometimes a foot long and half as wide, is common in many places in southern Florida.

Pentstemon multiflorus. Flowers white, not quite 1 in. long, in terminal panicle. Corolla bell-shaped, 5-lobed, somewhat 2-lipped. Fertile stamens 4, sterile stamen sparingly bearded. Plants 2-4 ft. tall. Leaves oblong, 2-6 in. long, slightly toothed near apex, clasping at base. Pinelands. Blooming in spring and summer. Fla.

Pentstemon australis. Flowers purple. Sterile filament densely bearded. Panicle narrow. Plants 1-3 ft. tall. Lower

leaves narrowed into winged leaf-stalks. Sandy soil. Blooming in spring and summer. Fla. and Ga. to Texas and Ark.

Capraria biflora. Flowers white, bell-shaped, 5-lobed, about $\frac{1}{2}$ in. long, fragrant, by pairs or solitary from leaf-axils. Stamens 4 or 5. Plants 1-3 ft. tall. Leaves alternate, oblong or broadened upward, about 1 in. long, toothed above middle. Near the coast. Blooming all the year. Fla. peninsula.

Scoparia dulcis. Flowers whitish, wheel-shaped, 4-lobed, hairy in throat, small, solitary from leaf-axils. Stamens 4. Plants 1-3 ft. tall. Leaves mostly in whorls of 3, elliptic, 1 in. long or less, toothed. Sandy soil, often on roadsides. Blooming chiefly from spring to fall. Fla. and Ga. to Texas.

AFZELIA (Genus *Afzelia* (*Seymeria*))

Plants of this genus, with short, finely cut leaves and many small yellow flowers, often dotted and streaked with brown and not quite half an inch across, bloom at the same time as the gerardias, and are often found growing with them in low pinelands. The dry plants, with a multitude of small black capsules, remain standing through the winter.

Afzelia cassioides. Flowers yellow, small, 5-lobed, tube short, solitary in axils of leaf-like bracts. Stamens 4, not hairy. Plants 2-4 ft. tall, widely branched. Leaves opposite, many, mostly less than 1 in. long, pinnately cut into thread-like divisions. Low pinelands. Blooming in summer and fall. Fla. to N. C. and Texas.

Afzelia pectinata. Stamens hairy. Flowers minutely hairy outside. Divisions of leaves broader than in above species. Plants somewhat sticky with viscid hairs. Dry soil. Fla. to N. C.

FALSE FOXGLOVE (Genus *Dasystoma*)

This ornamental plant of dry pinelands bears large yellow flowers among small, dark green, deeply cut leaves. The filaments of the stamens are bearded, and the large anthers are noticeably awned at the base.

Dasystoma pectinata. Flowers yellow, tubular below, expanded and 5-lobed above, $1\frac{1}{2}$ in. long, solitary in axils of leaflike bracts, hairy outside. Calyx 5-parted, divisions toothed. Stamens 4. Plants 2-4 ft. tall, branched, hairy and sticky. Leaves 1-2 in. long, divided and toothed. Dry soil. Blooming from spring to fall. Fla. to N. C., Texas, and Mo.

GERARDIA (Genus *Gerardia*)

Rose-colored gerardias of different species, with slender, almost invisible stems, bloom so profusely during late summer and autumn in low pinelands and borders of marshes that their flowers seem like hosts of butterflies. The broadly funnel-shaped corollas, with spreading five-lobed border, are usually spotted with magenta and yellow in the throat, and the stems are often dark red or purple.

This beautiful genus is named in honor of that celebrated flower-lover of the sixteenth century, John Gerarde, whose labors, he wrote, were "implied in descrying of such a harmelesse treasure of herbes, trees and plants, as the earth frankly without violence offereth unto our most necessary uses."

Gerardia filifolia. Flowers pink or rose purple, 1 in. long, solitary from upper leaf-axils, 5-lobed, upper lobes webby. Flower-stalks longer than leaves. Calyx minutely 5-toothed, short. Stamens 4. Stems 1-2 ft. tall, widely branched. Leaves alternate, clustered, thread-like, 1 in. long or less. Pinelands. Blooming in fall. Fla. to Ga. and Ala.

Gerardia divaricata. Flowers $\frac{1}{2}$ in. long. Flower-stalks longer than leaves. Leaves opposite, not clustered, thread-like. Low pinelands. Blooming in fall. Fla.

Gerardia linifolia. Flowers about 1 in. long. Root perennial. Stems 1-3 ft. tall, smooth, sparingly branched. Leaves opposite, narrow, fleshy, smooth, about 1 in. long. Low pinelands. Blooming in summer and fall. Fla. to Del.

Gerardia aphylla. Flowers $\frac{1}{2}$ in. long. Stem leaves reduced to minute scales. Low pinelands. Fla. to N. C. and La.

Gerardia fasciculata. Flowers about 1 in. long. Flower-stalks shorter than leaves. Stems 1-4 ft. tall, slightly rough. Leaves opposite, narrow, rough, about 1 in. long, with smaller leaves clustered in axils, upper leaves alternate. Chiefly in low grounds. Blooming from spring to fall. Fla. to Va. and Texas.

BLUE-HEARTS (Genus *Buchnera*)

Blue-hearts, whose small five-lobed flowers, of nearly equal lobes, are as often white as colored, bloom the year around in pinelands. The plants soon turn black when pressed for the herbarium, a characteristic that is shown by a number of other plants of this family. The flowers are usually less than half an inch across.

Buchnera elongata. Flowers white, purple, or bluish, small, in terminal spikes. Corolla tubular below, expanded and 5-lobed above. Stamens 4. Plants 1-2 ft. tall, seldom branched, rough with short, stiff hairs. Leaves opposite, oblong, 1-3 in. long, sometimes toothed. Pinelands. Blooming all the year. Fla. to S. C. and Texas.

SMALL FIGWORTS (Several genera)

Besides the species given above, we have in Florida a number of small plants of this family that are found chiefly in low grounds, where they are often very abundant. The flowers of all are small, the largest are barely one-half inch across. Among them *Ilysanthes*, which carpets damp places, merits its specific name of *grandiflora* only when the purple-spotted flowers are compared with the small size of the plants. This little mudwort is very common in many parts of the peninsula, and is said to be a favorite food of wild turkeys. Stiff, rough little plants of *Sophronanthe* are often found in dry pinelands. *Gratiola*, of low, erect growth, is common in wet soil, and a moss-like *Hemianthus*, with flowers so minute as to be nearly invisible, sometimes carpets muddy places.

Monniera Monniera. Creeping, purslane-like plant. Leaves opposite, broadened upward, less than 1 in. long. Flowers small, bluish white, nearly equally 5-lobed, solitary in leaf-axils. Stamens 4. Damp grounds. Blooming all the year. Fla. to Md. and Texas.

Septilia crenulata. Aromatic-scented creeping plant, with thick, hairy stems, opposite, roundish, smooth leaves 1 in. long or less, and solitary, blue, 2-lipped, axillary flowers. Stamens 4. Wet grounds. Blooming in spring and summer. Fla.

Mecardonia acuminata. Erect plant, 6-20 in. tall. Leaves opposite, oblong, toothed, 1-2 in. long. Flowers solitary, axillary, on slender pedicels, whitish, sometimes tinged with purple or pink, tubular below, unequally 5-lobed above. Stamens 4. Damp soil. Blooming all the year. Fla. to Md. and Texas.

Gratiola ramosa. Erect plant, 3-10 in. tall. Leaves short, opposite, thickish, with few teeth. Flowers yellowish white, solitary, axillary, 2-lipped, upper lip often tinged with pink. Stamens 2. Wet grounds. Blooming all the year. Fla. to S. C.

Sophronanthe hispida. Rigid, rough plants, 3-8 in. tall, with many short, narrow, entire leaves. Flowers white, 2-lipped, solitary, axillary. Stamens 2. Sandy soil. Blooming from spring to fall. Fla. to La.

Sophronanthe pilosa. Flowers similar to above species. Plants very hairy. Leaves oblong or oval, sparingly toothed. Low grounds. Blooming from spring to fall. Fla. to N. J. and Texas.

Ilysanthes grandiflora. Creeping plant, with small, opposite, roundish leaves, and solitary, axillary, slender-stalked, 2-lipped flowers, bluish purple outside, whitish with purple dots within. Lower lip broad. Stamens 2. Wet grounds. Blooming all the year. Fla. and Ga.

ACANTHUS FAMILY (*Acanthaceae*)

Herbaceous plants. Flowers funnel-form with 5-lobed border or 2-lipped. Stamens 2 or 4. Leaves opposite. Capsule few-seeded.

The genera *Ruellia* and *Calophanes* are the most widely distributed of this family in the peninsula, but in low pine-lands in southern Florida the rose-colored *Stenandrium* is locally abundant, and the red *Diapedium* is found in sandy soil.

The small, erect *Calophanes oblongifolia*, with many bluish purple flowers, often grows in small groups in dry pinelands, where it begins to bloom in late winter.

The beautiful ruellias are locally, but incorrectly, known as wild petunias. *R. humilis* in habit recalls the blue gentians of Alpine summits, which spring from the ground stemless as soon as melting snows release the life beneath. Haste is necessary in that short season, but here where haste seems superfluous this plant spends no time in lifting its large white-throated blue flowers high above the ground, but sets them squarely on the Florida sand—pale chalices open to the sky, like the distant gentians of the mountains. The few leaves are close to the ground, and above them the flowers open, one or two at a time, but only for a day. The flowers of the taller *R. parviflora* are a deeper blue, and the narrow throat is of nearly the same color as the lobed border.

The pretty *Stenandrium*, also, spends little time in forming stems, but open rose-colored flowers close to its dark green basal leaves.

Flowers of *Diapedium* resemble those of the mints in form, but as the seeds are in a capsule the plant is easily distinguished from the mints.

A water willow, *Dianthera crassifolia*, occasionally found in low grounds, is eight to twenty inches tall, with smooth, narrow, fleshy leaves, two to six inches long, and few-

flowered, stalked, axillary clusters of violet or purple two-lipped flowers, about an inch long, streaked on the lower lip with darker color.

Several cultivated plants of this family—thunbergias, strobilanthes, and jacobinia—are seen in Florida gardens, and in a few places are becoming naturalized.

Calophanes oblongifolia. Flowers bluish purple or pale purple, spotted with darker, somewhat 2-lipped, nearly 1 in. long, sessile in leaf-axils. Calyx lobes 5, bristle-like. Stamens 4. Plants 4-12 in. tall. Leaves oblong, 1 in. long or less. Dry soil. Blooming from late winter to fall. Fla. to Va.

Calophanes angusta. Similar to above, but smaller. Leaves linear. Flowers small. Blooming all the year. Southern Fla.

Ruellia humilis. Flowers pale bluish, about 2 in. long and nearly 2 in. across, sessile in leaf-axils, erect, funnel-shaped, 5-lobed. Calyx lobes 5, bristle-like. Stamens 4. Stems almost lacking early in season, later growing to a few inches in height. Leaves oblong or oval, 1-4 in. long, minutely hairy. Sandy soil. Blooming from spring to fall. Fla. and Ga. to Miss.

Ruellia ciliosa. Flowers blue, 2 in. long. Plants 8-24 in. tall. Leaves oblong or oval, 1-2 in. long, sessile, hairy. Dry soil. Blooming in spring and summer. Fla. to N. J., Mich., and Texas.

Ruellia parviflora. Flowers blue or purple, nearly 2 in. long. Plants 8-24 in. tall. Leaves oblong, stalked, 1-4 in. long. Dry soil. Blooming in spring and summer. Fla. to Md., Texas, and Ind.

Stenandrium floridanum. Flowers deep rose, nearly 1 in. long, tubular below, 5-lobed above, in few-flowered spike. Stamens 4. Stems 1-2 in. tall. Leaves basal, oblong or oval, entire, 1-2 in. long, dark green. Pinelands. Blooming more or less all the year. Fla.

Diapedium assurgens. Flowers red, about 1 in. long, 2-lipped, in spikes. Stamens 2. Calyx thin, 5-parted. Plants 1-3 ft. tall, branched, stem angled. Leaves elliptic or oblong, 1-3 in. long. Sandy soil. Blooming all the year. Fla.

Tubiflora carolinensis. Flowers white, small, 5-lobed, in dense spike terminating scaly flowering-stem 6-15 in. tall. Stamens 2. Leaves basal, oblong or broadened upward, 2-6 in. long. Low woods. Blooming in summer. Fla. to S. C.

BLADDERWORT FAMILY (*Lentibulariaceae*)

Low, insectivorous plants growing in water or damp soil. Flowers irregular, yellow or purple. Fruit a capsule.

BUTTERWORTS (Genus *Pinguicula*)

The beautiful yellow and purple butterworts are common during winter and spring, growing in low pinelands and in borders of marshes, where their moist, yellowish green leaves lie close to the moist earth. The plants often grow in great numbers, and each sends up many flowers during the blossoming season. The flowers are peculiar in having the calyx apparently placed, like a little five-pointed cap, on the side of the corolla. Though fragile in appearance, these flowers last many days. Marsh violets and bells are local names. The older name of butterwort describes the somewhat greasy surface of the insect-catching leaves, which in shape suggest shallow troughs, as the margins are slightly curved upward.

The leaves are covered with a colorless secretion which securely glues down small insects that touch it. The plants are remarkably equipped for this treacherous work, as a square centimeter of the surface contains, it is estimated, 25,000 of these mucilage-secreting cells. The leaves also have a slight power of movement, and when an insect is caught near the edge of a leaf the margin rolls inward, and either covers the insect or pushes it toward the center of the leaf. As soon as an insect is caught—but not before—a secretion of very different quality is poured out, which covers the victim, and rapidly dissolves the soluble parts of its body. This enriched secretion is then



FIG. 28. Purple Butterworts
Pinguicula elatior and *P. punila*

absorbed by the leaf, to the consequent benefit of the plant—an action astonishingly like that of the stomach in deriving nourishment from food. The secretion is so copious that it sometimes runs to the base of the leaf, and its action is so powerful that a fly after lying in it for a few hours falls to pieces if an attempt is made to move it. Remains of minute insects are often seen on the leaves and on the flower-stems. Pollen, also, acts as a stimulus on the secreting cells.

The leaves of a species of butterwort are used in northern Europe to thicken milk.

***Pinguicula lutea*.** Flowers yellow, 1-2 in. across, somewhat bell-shaped, spurred below, solitary on leafless flower-stem 6-15 in. tall. Corolla unequally 5-lobed, the lobes cleft. Stamens 2. Leaves basal, pale green, oblong or oval, entire, 1-3 in. long. Low pinelands. Blooming in winter and spring. Fla. to N. C. and La.

***Pinguicula elatior*.** Flowers purple, rarely pink, about 1 in. across. Leaves less than 2 in. long. Fla. to N. C.

***Pinguicula pumila*.** Flowers pale purple or white, rarely yellow, about $\frac{1}{2}$ in. across, on flower-stem 2-8 in. tall. Plants small. Leaves 1 in. long or less. Low grounds. Fla. to S. C. and Texas.

BLADDERWORTS (Genus *Utricularia*)

Bladderworts, also, are brigands. Not content with the innocent and universal task of the vegetable world—that of converting the inorganic into the organic—they practise the brigandage of the animal world, and outwit and murder. Attractive plants they are, however, with their sunbonnet-like flowers of yellow and purple swung over the water, flaunted by myriads above wet sand, or springing up here and there in damp pinelands.

Bladderworts that live in the water are remarkable for their finely dissected floating leaves, which are frequently mistaken for roots. The thread-like divisions of these

leaves bear a great number of tiny inflated sacs—a peculiarity that is recorded in both the generic name and the common name. These bladders, which are thought to be metamorphosed leaflets, are so constructed that the small valve which closes the only opening yields readily to pressure from without, and minute water creatures, bent on solving the problems of their universe, must needs push against this closed door. Who knows but good food may lie beyond? Good food there is when the insect has entered, but he himself is the food! The valve that opened so easily to admit him can never be swung outward. He is a prisoner in a dungeon, and is grewsomely surrounded by the skeletons of his fellows who have entered before him, their soluble parts having passed into the plant through the peculiarly specialized absorption cells within the bladders. In one small bladder the remains of no less than twenty-four minute water creatures have been counted.

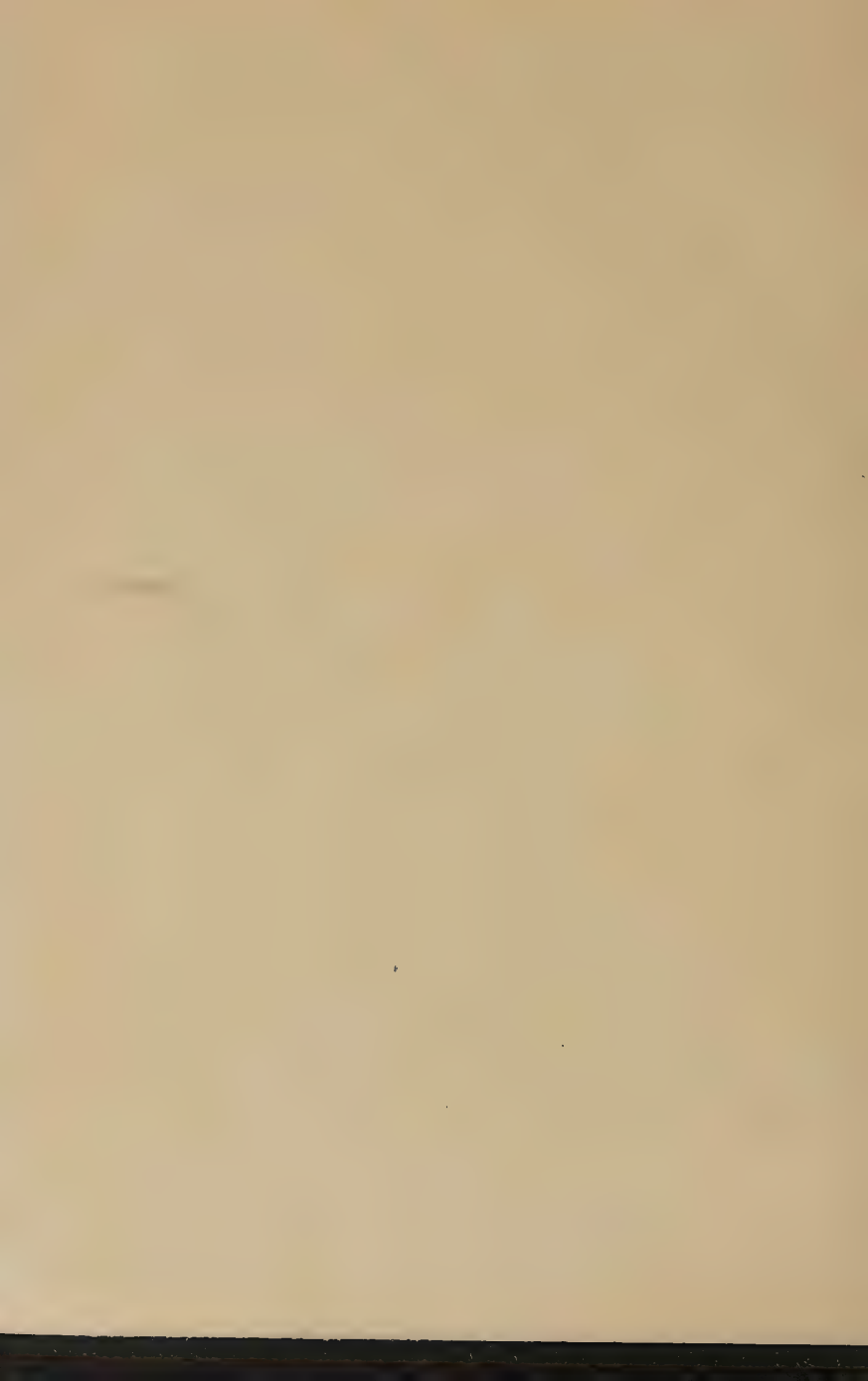
Aquatic bladderworts have the habit of remaining out of sight during a part of their existence, and rise to the surface of the water only for their blossoming season. The species shown in the illustration, *U. inflata*, develops radiating, air-filled floats that hold upright the slender stalk of yellow flowers, and are suggestive of large spiders spread out on the water. This species is common in shallow water, as are other bladderworts without floats.

Not all bladderworts lead an aquatic life: several species grow in wet sand, and their bladder-bearing leaves are much reduced or lacking. Of these the tiny *U. subulata* is widely distributed in low pinelands, and in spring the larger *U. cornuta* is often so abundant that its flowers encircle pineland ponds with broad rings of gold. Leaves, when present, in these species are small and grasslike, but are so fugacious that they are seldom seen.

The flowers of all show a characteristic two-lipped form, with a small spur below which is either pendent or is pressed closely to the lower lip.



FIG. 29. A Florida Brook
Floating-heart. Bladderwort. Water hyacinth. Water lily



Utricularia inflata. Flowers yellow, irregular, nearly 1 in. across, 3-12 in raceme. Flowering-stem 6-20 in. tall, bearing at surface of water a whorl of 5-9 inflated bracts 1-2 in. long. Calyx 2-lipped. Stamens 2. Leaves finely dissected, bladder-bearing. In shallow water. Blooming the greater part of the year. Fla. to Me. and Texas.

Utricularia oligosperma. Flowers yellow, about $\frac{1}{2}$ in. across, on stem 3-12 in. tall, without inflated bracts. Leaves finely dissected, bladder-bearing. Aquatic plant. Fla. to La.

Utricularia purpurea. Flowers purple, about $\frac{1}{2}$ in. across, on stem 3-10 in. tall. Leaves finely dissected, bladder-bearing. Aquatic plant. Fla. to Me. and Ind.

Utricularia cornuta. Flowers yellow, $\frac{3}{4}$ in. across, several at summit of stem 3-15 in. tall. Bladders few or none. Wet soil. Blooming chiefly in spring. Fla. to Texas and northward.

Utricularia subulata. Flowers yellow, very small, several, on hair-like, bronze-colored flowering-stem 1-8 in. tall. Leaves and bladders seldom found. Wet soil and low pine-lands. Blooming all the year. Fla. to Mass. and Texas.

Utricularia resupinata. Flower purple, small, solitary, resting across top of slender stem 2-6 in. tall. Leaves short, bladders few or none. In shallow water and wet soil. Blooming all the year. Fla. to Me. and Mich.

Cosmiza longiciliata (Utricularia). Flowers yellow, small, on thread-like stem 2-6 in. tall. Raceme spike-like. Calyx, bracts, bractlets, and scales on stem bristly or hairy. Low grounds. Fla. peninsula.

BIGNONIA FAMILY (*Bignoniaceae*)

Vines or shrubs with showy red or yellow trumpet-shaped flowers.

TRUMPET-CREEPER, CROSS-VINE, and YELLOW ELDER
(Several genera)

The brilliant flame-vine of Brazil, the most universally planted ornamental in the Florida peninsula, has attractive

relatives among native plants. Our stout trumpet-creeper climbs palmettos and other trees by means of aërial roots, branches widely from their trunks, and bears large red and yellow flowers. The cross-vine also climbs, but clings tightly to the trees by its branched tendrils, which grow from between the two leaflets of each leaf. The yellow elder, planted as an ornamental, has become naturalized in some places. The seeds of all are winged, and are in leathery capsules four to seven inches long.

Campsis radicans (Tecoma). Trumpet-creeper. Flowers red outside, yellow within, 2-3 in. long, funnel-shaped with 5-lobed, spreading border, in terminal clusters. Stamens 4. Woody vine. Leaves opposite, of 7-11 oval or elliptic, toothed leaflets 1-3 in. long. Chiefly in woods and swamps. Blooming in spring and summer. Fla. to N. J., Texas, and Iowa.

Bignonia crucigera. Cross-vine. Trumpet-flower. Flowers red or orange outside, yellow within, about 2 in. long, in axillary clusters. Woody vine. Leaves opposite, of 2 oblong leaflets 2-6 in. long. Woods and swamps. Fla. to Va., La., and Ill.

Stenolobium stans (Tecoma). Yellow elder. Flowers yellow, fragrant, 1-2 in. long, in terminal panicles. Shrub 2-20 ft. tall. Leaves opposite, of 7 or 9 toothed leaflets 1-4 in. long. Sandy soil. Blooming at intervals through the year. Fla.

MISTLETOE FAMILY (*Loranthaceae*)

The mistletoe of tradition, and of Druidical use, does not grow in America, but mistletoes of the same family, species of *Phoradendron*, are common in Florida, where these harmful parasites are seen growing as evergreen bushes on the branches of various trees. The spikes of pale one-seeded berries, from the axils of the opposite leathery leaves, are more noticeable than the minute flowers.

XIMENIA FAMILY (*Olacaceae*)

Shrub or small tree. Leaves alternate, entire. Flowers small, 4-lobed. Fruit yellow, plum-like.

TALLOW-WOOD. HOG PLUM (Genus *Ximenia*)

The characteristic light green or yellowish green foliage, the plum-like fruit, and the fragrance of the small hairy flowers make identification of this thorny shrub an easy matter. It is common in many places through the peninsula and near the coast. The fruit is said to be edible, but not all who taste it will agree that it is.

***Ximenia americana*.** Flowers small, yellowish, in leaf-axils. Petals 4, narrow, thick, hairy within, united at base. Fruit a yellow drupe about 1 in. in diameter. Thorny shrub or small tree. Leaves generally oblong or elliptic, 1-3 in. long, smooth, short-stalked, rounded or notched at apex, often in clusters of 3. Dry soil. Fla. peninsula.

MADDER FAMILY (*Rubiaceae*)

Flowers regular, tubular below, 4-6-lobed above. Stamens attached to corolla and alternate with the lobes. Leaves opposite or whorled, with stipules.

HOUSTONIA. DIAMOND-FLOWER. INNOCENCE (Genus *Houstonia*)

Dainty mats of leaf-mosaic, lying close to the ground and sprinkled with little diamond-shaped flowers, attract the attention in winter. This plant, the round-leaved houstonia, related to the bluets of northern fields, is common in many parts of the state, growing in dry and also in damp soil. After its noticeable season of winter bloom has passed, inconspicuous fertile flowers are borne through the summer. Other houstonias of different habit, with slender,

erect stems, and small white or bluish flowers in terminal clusters, are occasionally found in sandy soil.

The flowers show the same peculiarity that has caused English primroses to be known as "pin-eyed" and "thrum-eyed," according to whether the stigma or the anthers show at the top of the flower—a device by which cross-pollination is effected.

Houstonia rotundifolia. Flowers white, about $\frac{1}{2}$ in. across, tubular below, expanded and 4-lobed above, solitary from leaf-axils. Stems creeping, 3-15 in. long. Leaves oval or roundish, less than 1 in. long, often very small. Sandy soil. Blooming chiefly in winter and spring. Fla. to S. C. and La.

Houstonia angustifolia. Flowers small, white or bluish, in terminal clusters. Stems 4-20 in. tall. Leaves narrow, often clustered, about 1 in. long. Dry soil. Fla. to Texas and Ill.

SHRUBS (Several genera)

Our most beautiful shrubs of this family are confined to the warmest parts of the peninsula. The handsome genipa, or seven-year apple, *Genipa clusiifolia*, with starry white fragrant flowers, and leaves that glisten as though freshly varnished, is found near the coast. The leaves, two to six inches long, are broadened upward, and are clustered at the ends of the branches; the pear-shaped fruit, two to three inches long, contains flattened seeds embedded in pulp that has the flavor of dried apples.

The tropical *Exostema caribaeum* has slender-tubed white flowers, two inches long, that are tinged with rose. The leaves are pointed.

Hamelia, with cylindrical red flowers in terminal clusters, and beautiful leaves that have an almost iridescent sheen when winter changes them to red and bronze, is a native shrub that is brought for ornament into Florida gardens.

Common but less attractive shrubs of the southern coasts

are the low ernodea, with many leaves and little berry-like yellow fruit, and the thorny randia with whitish berries that are black inside.

Several shrubs that bloom during spring and summer are noticeable in winter because of their fruit. Among these are the climbing or shrubby snowberry, *Chiococca*, whose drooping racemes of white fruit ornament hammocks near the coast, and wild coffee, *Psychotria*, which has dark red fruit in flat-topped clusters above prominently veined leaves.

The button-bush, *Cephalanthus*, which grows as often in Florida swamps as in northern swamps, is known here as Spanish pincushion—a name appropriate to the flowering-heads from which the pistils stick out like pins in all directions.

Products of exotic plants of this family are widely known: coffee “berries” are the seeds of the pulpy red fruit of tropical coffee trees; quinine is prepared from the bark of cinchona trees of South America; and madder and other dyes have been obtained from different species. The handsome gardenia, or cape jasmine, is often planted in Florida gardens.

Hamelia patens. Flowers red or orange, tubular, nearly 1 in. long, in terminal clusters. Calyx and corolla 5-lobed. Fruit small, black. Shrub 3-10 ft. tall. Leaves in whorls of 3, elliptic or oblong, 2-6 in. long. Sandy soil. Southern Fla.

Cephalanthus occidentalis. Button-bush. Spanish pincushion. Flowers white, tubular, 4-lobed, small, crowded in globular, long-stalked heads 1 in. or more in diameter, from axils of upper leaves. Shrub or small tree. Leaves opposite or in whorls of 3, pointed, 3-7 in. long. Swamps and low grounds. Blooming from spring to fall. Fla. to Texas and northward.

Chiococca racemosa. Snowberry. Flowers white or yellowish, small, 5-lobed, in axillary racemes. Fruit white, small. Shrub, climbing or trailing. Leaves elliptic or oval, 1-3 in.

long. Near the coast. Blooming in spring and summer. Southern Fla.

Psychotria undata. Wild coffee. Flowers white, small, in terminal panicles. Fruit small, dark red. Shrub or small tree. Leaves elliptic or oval, pointed at both ends, glossy, 2-6 in. long. In thickets near the coast. Fla.

Ernodea littoralis. Flowers yellowish, small, 4-6-lobed, solitary in leaf-axils. Fruit small, yellowish, 2-seeded. Shrub, prostrate or spreading. Stems 4-angled. Leaves leathery, smooth, often clustered, rather narrow, 1 in. long or less. Near the coast. Southern Fla.

Randia aculeata. Flowers white, small, in leaf-axils. Fruit whitish, seeds several. Shrub 3-10 ft. tall, usually spiny. Leaves variable, usually broadened upward, often clustered, about 1 in. long. Near the coast. Fla.

BUTTONWEEDS, PARTRIDGE BERRY, and GALIUM (Several genera)

A few plants of this family are such common weeds in Florida that they should be mentioned because of their energetic persistence in appearing in cultivated land and on roadsides; buttonweeds some are called, from their habit of crowding their tiny flowers in small heads. *Richardia brasiliensis*, with spreading or prostrate stems, hairy oval or oblong leaves, one to three inches long, and dense terminal clusters of inconspicuous white flowers, is a very common weed of sandy soil, as are species of *Diodia*, whose small white or pale pink 4-lobed flowers are solitary or a few together in the axils of the narrow leaves, which are connected at the base by bristle-fringed stipules. These weeds produce from each flower only two to four seeds, which are in dry nutlets that separate from one another at maturity.

The partridge berry, *Mitchella repens*, whose creeping stems, small dark green leaves, four-lobed white flowers, and red fruit are often seen in northern woods, is common in many places in Florida.

Our species of *Galium* are slender, inconspicuous, branching plants with four-angled stems, leaves in whorls of four to seven, and minute flowers in small clusters from the leaf-axils.

HONEYSUCKLE FAMILY (*Caprifoliaceae*)

Shrubs, trees, or woody vines. Leaves opposite. Fruit pulpy.

SOUTHERN ELDER (*Sambucus intermedia*)

The common northern elder, *S. canadensis*, waits until summer is fully established before opening its flowers, but our southern elder blooms profusely the year around, and travelers through the state are seldom long without a glimpse of its large, flat-topped clusters of small white flowers. The dark purple or blackish fruit is sometimes very abundant. This shrub or small tree grows in damp soil, where it often forms dense thickets. The leaves are of several sharply toothed leaflets, one to five inches long.

VIBURNUM. ARROW-WOOD. BLACK HAW (Genus *Viburnum*)

Few cultivated shrubs are more beautiful than our native *V. obovatum*, which in late winter or early spring is whitened from the lowest to the highest branches with innumerable clusters, one to two inches across, of small, five-lobed flowers. The glossy evergreen leaves, one-half to two inches long, are broadened upward. The small, one-seeded drupes are black. It is found near streams, and also in dry soil, in the South.

V. nudum, with larger and fewer clusters, two to six inches broad, oval or oblong leaves two to seven inches long, and dark blue drupes, is also very ornamental. It is found in woods and swamps from Florida northward to Long Island.

The handsome black haw, *V. rufidulum* (*V. rufotomentosum*), which grows as a large shrub or a small tree from Florida to Virginia and Texas, has flower-clusters three to five inches across, shining leathery leaves, two to five inches long, with rusty hairs on the veins beneath, and blue drupes half an inch in length.

HONEYSUCKLES (Genus *Lonicera*)

The coral honeysuckle, *L. sempervirens*, with clusters of tubular scarlet and yellow flowers nearly two inches long, and smooth evergreen leaves, the upper pairs of which are united at the base, is occasionally found in woods and thickets. The Japanese honeysuckle, *L. japonica*, whose fragrant, two-lipped white flowers change to yellow in fading, often escapes from cultivation in the South.

VALERIAN FAMILY (*Valerianaceae*)

CLIMBING VALERIAN (*Valeriana scandens*)

This delicate vine, with smooth, divided leaves, and small clusters of minute white flowers, climbs in thickets in Florida, and is remarkable in the calyx, whose border is at first inrolled but after flowering opens in a number of plumose bristles which crown the small one-seeded fruit and serve to float it on the breeze.

GOURD FAMILY (*Cucurbitaceae*)

Tendril-bearing vines. Leaves alternate, lobed. Flowers white or yellow, 5-lobed. Fruit somewhat cucumber-like.

BALSAM APPLE and GHERKINS (Several genera)

In the southern part of the peninsula, especially toward the coast, the introduced balsam apple, *Momordica Charan-*

tia, sometimes takes exuberant possession of waste land, and even intrudes in orange groves and other cultivated grounds, where it spreads long stems and lobed leaves over the sand, climbs on fences and shrubs, and makes itself generally at home. Like our other vines of this family, the balsam apple has little yellow five-lobed flowers, but its yellow fruit is like nothing else under the Florida sun: oval or broadly spindle-shaped in form, three to six inches in length, and extremely warty in appearance, it bursts open when ripe and displays large seeds gaudily embedded in crimson pulp. In cooler climates, where it cannot grow as a weed, the balsam apple is cultivated as an ornamental vine, and by Chinese the fruit is used in a conserve.

Graceful wild relatives of the cultivated cucumbers and melons trail over the ground in Florida, or climb on wayside fences, unhampered by the burden of producing overgrown fruit for market. *Melothria pendula*, a pretty vine with small lobed leaves, apes the watermelon, and ripens smooth oblong fruit, only half an inch to an inch in length, but similar in form and in mottled markings to its gigantic cousin.

The bur gherkin, *Cucumis Anguria*, may be eaten like the cucumber, and when planted by trellises covers them with a screen of deeply lobed, roundish leaves, among which hang prickly oval fruit, one to two inches long.

BELLFLOWER FAMILY (*Campanulaceae*)

Small herbaceous plants. Flowers regular, blue or purple, 5-lobed. Leaves alternate. Fruit a capsule.

***Campanula floridana*.** Bellflower. Flowers blue or purple, bell-shaped, small, in terminal racemes, buds drooping. Stems angled, very slender, 6-15 in. long. Leaves narrow, about 1 in. long. Swamps, growing among grasses. Blooming in spring and summer. Fla. peninsula.

Specularia perfoliata. Venus' looking-glass. Flowers blue, wheel-shaped, small, sessile in leaf-axils. Plants 6-20 in. tall. Leaves roundish, toothed, less than 1 in. long, clasping the stem. Chiefly in dry soil. Blooming from midwinter to fall. Fla. to Mexico and northward.

LOBELIA FAMILY (*Lobeliaceae*)

Herbaceous plants. Flowers blue, purple, or white, 2-lipped, split, in terminal racemes. Leaves alternate. Fruit a capsule.

LOBELIAS (Genus *Lobelia*)

The flowers of this genus are peculiar in form for, besides being very irregular, the corolla is slit open on one side, and the five stamens, though separate at the base, are united above.

One of our most common lobelias is the tall *L. glandulosa*, which blooms in marshy places all the year, the color of its flowers varying in intensity according to location. *L. paludosa*, with smaller and paler flowers, is common in damp soil, and the delicate little *L. Feayana* is abundant during winter and spring in low pinelands.

Lobelia glandulosa. Flowers blue, purple, or pale purple, nearly 1 in. long, in terminal raceme. Calyx 5-lobed, glandular-toothed. Plants 1-4 ft. tall. Leaves narrow, thickish, remotely toothed, lower leaves 2-6 in. long, upper leaves short. Wet places. Blooming all the year. Fla. to Va.

Lobelia paludosa. Flowers white or pale blue, $\frac{1}{2}$ in. long. Plants 1-3 ft. tall. Leaves narrow, lower leaves 2-10 in. long. Low grounds. Blooming chiefly from spring to fall. Fla. to Del. and La.

Lobelia Feayana. Flowers blue, small, raceme few-flowered. Stems slender, 3-12 in. tall. Leaves few, roundish, small. Damp soil. Blooming chiefly in winter and spring. Fla.

Lobelia Xalapense. Flowers blue, small. Stems 10-24 in. tall, branched. Leaves roundish, stalked, toothed, about 1 in. long. Damp soil. Blooming chiefly in spring and summer. Fla.

GOODENIA FAMILY (*Goodeniaceae*)BEACH-BERRY (Genus *Scaevola*)

This low, shrubby plant, which grows in spreading groups on southern sea beaches, is allied to the lobelias, and its interesting flowers show the same peculiarity as theirs in being slit nearly to the base on one side. Through this opening the stamens and pistil protrude. The corolla is thick in texture, but the lobes are thin on the edges, and are more or less ragged toward the base. The stigma, also, is peculiar. The black, pulpy fruit, half an inch in length and oval in shape, contains one seed.

Scaevola Plumieri. Flowers usually yellowish or white, with yellow throat, about 1 in. long, from leaf-axils. Corolla irregular, deeply 5-lobed, woolly inside. Stamens 5. Shrubby, 1-2 ft. tall. Leaves alternate, many, fleshy, broadened upward, entire, 1-3 in. long. Sea beaches. Southern Fla.

RAGWEED FAMILY (*Ambrosiaceae*)

Plants of this branch of the composite family have inconspicuous heads of tiny green or whitish flowers, which were described by an eminent botanist of the last century as "mean and obscure." They grow chiefly as weeds and as unattractive plants of salt marshes and sea beaches.

The tall annual ragweed, *Ambrosia artemisiifolia*, with thin, deeply cut leaves, and many terminal racemes of minute green cup-shaped flowering-heads, grows far too frequently in cultivated lands and on roadsides from Canada to South America. *A. hispida*, a perennial with prostrate basal branches, hairy stems, and thick, deeply cut leaves, grows on the coast.

Marsh elder, or highwater shrub, *Iva frutescens*, a shrub four to twelve feet tall, with sharply toothed three-nerved

leaves two to six inches long, and tiny greenish white flowering-heads nodding in leafy racemes from the upper leaf-axils, grows in the borders of salt marshes. The shrubby *I. imbricata*, one to two feet high, has scented foliage of narrow, entire or nearly entire, thick leaves, one to two inches long, tiny, axillary, drooping heads, and grows in sand along the coast.

COMPOSITE FAMILY (*Compositae* (*Carduaceae*))

Flowers small, crowded in heads that may appear like solitary flowers—such as asters, dandelions, and thistles.

Though other families of plants may be of more service to man, few others appear more successful in multiplying and possessing the earth.

Such cultivated plants as dahlias, chrysanthemums, marigolds, asters, zinnias, Transvaal daisies, cosmos, sun-flowers, gaillardias, coreopsis, and ageratum, are all of this household. The purple and gold of our autumn wild flowers are due chiefly to the many native composites. From this family the kitchen-garden has lettuce, endive, salsify, and artichokes. And among weeds the success of the composites is shown only too well by Spanish needles and other species.

The success of this vast family has not been gained by ripening many seeds from each flower, but by crowding many flowers together and ripening one seed from each. Typical "flowers" of composites are formed of many small flowers pressed closely together in a flowering-head that is surrounded by an involucre of several or many bracts. The calyx of the individual flower, when present, is represented by bristles, hairs, awns, or scales, called the pappus, which crowns the one-seeded fruit (an achene) and aids in its dispersal.

A benefit gained by this crowding is that cross-pollin-



FIG. 30. Dog-Fennel
Eupatorium capillifolium

nation is more certain. The stamens mature before the pistil, and shed their pollen into the stamen-tube, from whence, in many species, it is swept out by the developing pistil, as by a chimney-sweeper's brush, and is left where curving stigmas of neighboring flowers touch it, and where insects, in crawling over the flowers, carry it from one to another.

The pollen of some composites is protected at night and in damp weather by the ray flowers, which bend inward and cover the disk, and in a number of species the whole head bends downward.

In one respect the composites are satisfactory to the flower-hunter in the Florida peninsula, for some are sure to be found in bloom: in another respect they are less satisfactory, for, although it is easy to recognize a flowering-head of this family, it is not always easy to identify the species. Our more showy composites are not difficult to identify, but the student who wishes to know our lesser members of this family should resort to a manual of botany, where technical descriptions are given of the several hundred species found in Florida.

In order to identify the species more easily, it is convenient to divide the genera into three chief groups, based on the form of the flowers composing the head. (See Keys.)

GROUP I

In the thistle, which on a large scale is typical of this group, the small flowers are all alike and are regular in form, being tubular, with four or five tiny lobes. Those flowers are called *disk* flowers, and the head is called *discoid*.

GROUP II

In this group, which has the wild aster as its type, a flowering-head like that of the first group is encircled by

irregular, strap-shaped ray-flowers. The flowering-head is called *radiate*, the center is called the *disk*, and has tubular *disk* flowers.

GROUP III

The rushweed (see illustration), typical of this group, has flowers of only one form—irregular, one-lipped ray-flowers, whose prolonged lip is strap-shaped. Such flowers are also known as *ligulate*. The sap of this group is milky.

GROUP I. Flowers alike, tubular, 4-lobed or 5-lobed.

The purple blazing stars, *Liatris*, ornament dry pine-lands in autumn with many wandlike stems along whose graceful length are set numerous flowering-heads. With the blazing stars, and also in damp soil, the paint-brush, *Carphephorus*, brilliant in lighter purple, is easily identified by its flat-topped inflorescence, which has a relatively short period of bloom and soon changes to gray.

A beautiful low shrub, *Garberia*, growing in dry sand, crowns its many branches with clusters of delicately colored fragrant flowering-heads of pale purple or pink, and is admirable for ornamental planting.

The purple *Trilisa paniculata* blooms in damp pinelands from October to December in royal color. Its branched, cylindrical inflorescence is sticky to the touch, and is strongly scented. The taller vanilla-scented *T. odoratissima* differs from the preceding in its smooth stems and broader inflorescence. The leaves become fragrant in drying, and keep their odor for many months.

The graceful dog-fennel, *Eupatorium capillifolium*, is often abundant in dry soil and on roadsides, where groups of its tall stems bend to the breeze. The myriads of minute white flowering-heads, scattered along slender droop-



FIG. 31. The Sea-Myrtle's Harvest
Baccharis halimifolia

ing branches, ripen like tiny thistles, and give the plants the appearance of great plumes. *E. leptophyllum*, of similar habit, grows in damp soil, but bears its flowering-heads along only one side of the branches. Several of this genus resemble white ageratums, and are commonly called by that name, but may be distinguished by their hairy pappus, which ageratums do not have.

A tropical climbing hempweed, *Mikania cordifolia*, with larger and softer leaves than the northern *M. scandens*, and with fragrant flowers, is a common vine near the coast, where it blooms nearly all the year.

A wonderful harvest is shown in early winter by the sea-myrtle, or groundsel-tree, *Baccharis*, which, after its dull flowering season has passed, covers itself with flocculent masses of white, when the silvery pappus of the ripening heads gives the shrubs the appearance of being in full bloom.

An introduced weed from the West Indies, *Emilia sonchifolia*, blooms all the year in southern Florida, showing small red flowering-heads, like miniature carnations.

Less attractive than others of this group, but very common in cultivated grounds in winter and spring, are the homely cudweeds, *Gnaphalium*, of low growth, with silvery or woolly gray-green leaves, and minute heads crowded in woolly spikes, as, on a larger scale, are the heads of black-root, *Pterocaulon*, a common plant that is easily identified by its oddly winged stems, down which the bases of the leaf-blades extend.

In this group should be included a somewhat aberrant rayless sunflower, *Helianthus Radula*, abundant in low pinelands, where the long-stalked, solitary, dark brown heads grow by hundreds in late summer and autumn, and even when freshly blooming appear like flowers that have "gone to seed." At any season the plant may be recognized by its hairy leaves which lie on the ground in a cross-shaped group.

GROUP II. Heads with ray-flowers surrounding the disk.

The most beautiful of our asters is *Aster carolinianus*, whose pink or light purple flowering-heads ornament shrubby borders of lakes and streams, where the long stems of this aster push up through other growth, lie along the branches of trees and shrubs, and bloom during autumn and winter. Two remarkable asters are found in pine-lands, *A. adnatus*, whose tiny upright leaves are adnate to the stem for a part of their length, and *A. squarrosus*, whose tiny leaves are reflexed. Both have attractive violet or blue rays. *A. concolor* resembles a blazing star in its wandlike growth, as the heads are borne more closely along the stem than is usual in the asters.

A dwarf sunflower, *Helianthus debilis*, is common on the coast, where it spreads a dark green carpet of many rough leaves as a background for its golden-rayed, brown-centered heads. And on the coast grows the shrubby sea ox-eye, *Borrchia*, with thick grayish leaves, and yellow flowering-heads. A slender sunflower, *Helianthella*, which blooms all summer in pinelands, has rough, upright stems topped by large yellow heads.

A showy gaillardia from western states, and a marigold with strong-scented foliage, from tropical America, are becoming naturalized in some localities.

Fleabanes, *Erigeron*, common in damp places in winter and spring, show a rosette of basal leaves, and a branched inflorescence of small aster-like heads with yellow centers and white or purple rays.

Spring marshes are bright with the solitary, long-stalked heads of a sneezeweed, *Helenium*, whose leaves are in a basal rosette. A weed of this genus is of branched growth, with many leaves and many yellow heads.

Little sunflower-like heads of *Berlandiera*, called "buttercups" in Florida, bloom from midwinter to autumn above clustered basal leaves. When the sun goes down,



FIG. 32. *Garberia*
Garberia fruticosa

or is hidden on a dark day, the heads bend downward. It is more common in central Florida than in the extreme southern part of the peninsula.

A bright composite common in sandy soil in autumn, *Actinospermum*, of bushy growth, a foot or two in height, crowns its slender branches with large golden heads, which in ripening become hard and honeycombed, so that the silky achenes are held in tiny cavities.

Goldenrods, *Solidago*, whose ray-flowers are minute, bloom nearly all the year. The closely allied *Euthamia*, often abundant on roadsides and near marshes, has a flat-topped, branching growth, with many thread-like leaves, and innumerable flowering-heads.

Golden asters—species of *Chrysopsis* of various leaf-forms and habits of growth, and the weedy *Heterotheca* with strong-scented foliage—bloom through a large part of the year in many places.

One of the most common of this group is a weed, Spanish needles, *Bidens leucantha*, whose small heads of yellow disk flowers surrounded by a few broad white rays bloom all the year. A cosmopolitan traveler in the warmer countries of the earth, it grows on roadsides and in cultivated grounds, where its success in establishing itself is due in part to its ability to compel man's unwilling aid in distributing its seeds. No trusting this harvest to the capricious wind! Barbed prongs on the ripe achenes await the passer-by; he brushes carelessly against the plants and scores of "devil's pitchforks" are in his clothing, ready to travel with him and grow in other places. The golden bur-marigold of this genus, with larger flowering-heads, also blooms all the year, but is found only in wet places, and is not equipped with barbed prongs.

To this group belongs a prostrate weed, *Acanthospermum australe*, whose ripening heads show astonishing originality of shape, as the inner bracts become hardened and form a star-shaped cluster, about half an inch across, consisting of

five oblong, prickly burs, each of which contains one achene.

Allied to this division is the little winter daisy, *Chaptalia*, which is remarkable among our other plants of this family, as the small disk flowers in the center of the head do not have the usual form but are somewhat two-lipped; a characteristic that is common among composites of tropical America, but is rare in those of the United States.

GROUP III. All flowers strap-shaped.

The beautiful rushweed, *Lygodesmia*, of this group is common in pinelands, where it blossoms more or less all the year. The naked, rush-like stems and large lavender or pink flowering-heads are characteristics that distinguish it from our other composites.

The dwarf dandelion, *Adopogon*, with little orange-yellow heads on stalks only a few inches tall, begins to bloom in winter and the pretty false dandelion *Sitilias*, with long-stalked heads of lemon-yellow flowers, begins to bloom before winter has passed.

Hawkweeds, *Hieracium*, identified by their small yellow heads in a branched inflorescence above hairy basal leaves, and by milky sap, are common through the state. Not only in the English language but also in other languages this genus is known by names that refer to an old belief that birds of prey used these plants to increase their vision.

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GROUP I

PAGE

HEADS WITHOUT RAY-FLOWERS. ALL FLOWERS TUBULAR

SHRUBS

Light purple or pink flowers.....	Garberia	231
Whitish flowers, pappus hairlike.....	Baccharis	231
Whitish flowers, pappus of scales.....	Palafoxia	232

VINES. Flowers whitish, lvs. opposite.....	Mikania	230
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HERBACEOUS PLANTS

LEAVES CHIEFLY BASAL

Pale purple flowers.....	Elephantopus	229
Dark brown flowers.....	Helianthus	232

LEAVES OPPOSITE

Blue flowers	Conoclinium	230
White flowers, pappus hairlike.....	Eupatorium	230
White flowers, pappus not hairlike.....	Melanthera	232

LEAVES ALTERNATE, USUALLY TOOTHED OR DIVIDED

Red or orange-red flowers.....	Emilia	233
Yellow flowers	Chondrophora	231
Purple flowers, lvs. spiny	Carduus	233
Purple flowers, lvs. not spiny	Pluchea	232
White flowers, lvs. finely divided.....	Eupatorium	230
Whitish flowers, lvs. shallowly toothed.....	Mesadenia	233
Greenish flowers, lvs. deeply toothed.....	Erechtites	232

LEAVES ALTERNATE, USUALLY ENTIRE

White or pinkish fls., stems not winged.....	Polypteris	232
Whitish fls., stems winged.....	Pterocaulon	232
Purple or violet flowers		
Leaves narrow, heads in long racemes.....	Liatris	231
Leaves narrow, inflorescence flat-topped....	Vernonia	229
Leaves oblong, inflorescence flat-topped.	Carphephorus	231
Leaves oblong, heads in panicles.....	Trilisa	230

Vernonia angustifolia. Ironweed. Flowers dark purple, heads many, in wide terminal inflorescence. Pappus hairlike purplish bristles. Stems 2-3 ft. tall. Leaves narrow, 2-7 in. long. Dry soil. Blooming in summer and fall. Fla. to Ga. and Miss.

Elephantopus tomentosus. Elephant's-foot. Devil's grandmother. Flowers pale purple, heads small, in dense clusters in 3 broad bracts. Pappus of bristles, scalelike at base. Plants 1-2 ft. tall. Leaves chiefly basal, oblong or broad-

ened upward, 3-9 in. long. Dry soil. Blooming in summer and fall. Fla. to Va. and La.

Eupatorium capillifolium. Dog-fennel. Flowers white, heads tiny, many, on slender branches. Pappus hairlike bristles. Plants 3-10 ft. tall. Leaves alternate, many, finely cut. Dry soil. Blooming in fall. Fla. to Va.

Eupatorium leptophyllum. Similar to above species, but heads are in line on upper side of branches. Damp soil. Fla. to S. C.

Eupatorium aromaticum. White snakeroot. Resembles *ageratum*. Heads white, many. Stems 1-3 ft. tall, branched. Leaves opposite, stalked, broadest at base, toothed, 1-3 in. long. Dry soil. Blooming in summer and fall. Fla. to Miss., Tenn., and Mass.

Eupatorium recurvans. Heads white, in compact terminal inflorescence. Stems 1-2 ft. tall. Leaves opposite or whorled, about 1 in. long, toothed, strongly recurved. Pinelands. Blooming in spring and summer. Fla. to Ga. and Ala.

Conoclinium coelestinum. Mist flower. Heads small, blue, clustered at ends of branches. Pappus hairlike bristles. Stems 1-3 ft. tall. Leaves stalked, toothed, broadest near base, 1-3 in. long. In shaded places. Blooming from spring to fall. Fla. to N. J., Texas, and Kan.

Mikania cordifolia. Hemp-vine. Twining vine, with small whitish heads in stalked clusters from leaf-axils. Leaves broad, heart-shaped at base, softly hairy. Pappus hairlike bristles. In hammocks and thickets. Blooming all the year. Fla. peninsula.

Trilisa paniculata. Heads purple, many, in cylindrical panicle. Pappus hairlike bristles. Stems 1-3 ft. tall, reddish and viscid, odorous. Leaves narrowly oblong, entire, 2-10 in. long. Damp pinelands. Blooming in fall. Fla. to Va.

Trilisa odoratissima. Vanilla-leaf. Deer-tongue. Heads purple, many, in flat-topped panicle. Stems smooth, 2-4 ft. tall. Leaves oblong, pale green, 3-10 in. long, vanilla-scented in withering. Pinelands. Blooming in fall. Fla. to Va. and La.



FIG. 33. Rabbit-Tobacco
Pterocaulon undulatum

***Liatris gracilis* (Laciniaria).** Blazing star. Button snake-root. Heads purple, rarely white, spreading from stem in long raceme. Pappus hairlike bristles. Plants 1-4 ft. tall. Leaves narrow, stem leaves spreading, 1-2 in. long, basal leaves longer. Sandy soil. Blooming in summer and fall. Fla. to Ga. and Ala.

Liatris tenuifolia. Heads similar to above species, but erect, in narrow raceme. Plants 2-4 ft. tall. Stem leaves erect, short, narrow, lower leaves 4-10 in. long. Pinelands. Fla. to N. C.

Garberia fruticosa. Heads light purple or pink, in terminal panicles, fragrant. Pappus hairlike bristles. Shrub 2-6 ft. tall. Leaves alternate, leathery, entire, broadened upward, gray green, 1 in. long or less. Sandy soil. Blooming in fall. Fla.

Carphephorus corymbosus. Paint brush. Heads bright lilac or pinkish, in compact terminal inflorescence. Pappus hairlike bristles. Plants 1-3 ft. tall. Leaves oblong, entire, pale green, sessile, 2-6 in. long, stem leaves shorter. Sandy soil. Blooming in summer and fall. Fla. to N. C.

***Chondrophora nudata* (Bigelovia).** Rayless goldenrod. Heads small, yellow, in flat-topped inflorescence. Involucre bracts yellowish, glutinous. Pappus hairlike bristles. Stems 1-2 ft. tall. Leaves narrow, entire, 1-4 in. long. Low pine-lands. Blooming in summer and fall. Fla. to N. J. and Texas.

Baccharis halimifolia. Sea-myrtle. Groundsel tree. Shrub 3-12 ft. tall. Heads small, whitish, in stalked clusters, conspicuous later because of white pappus of hairlike bristles. Leaves wedge-shaped or oblong, very variable, toothed toward apex, 1-3 in. long. Low grounds. Blooming in fall. Fla. to Mass. and Texas.

Baccharis glomeruliflora. Similar to above, but heads are sessile, or nearly so, in leaf-axils. Swamps. Fla. to N. C.

Baccharis angustifolia. Heads similar to above, in short-stalked clusters. Leaves narrow, 1-3 in. long, usually entire. Marshes near the coast. Fla. to N. C. and Texas.

Pluchea foetida. Marsh fleabane. Heads small, purplish, in terminal clusters. Pappus hairlike bristles. Plants 1-3 ft. tall, odorous. Leaves oblong, sessile, toothed, 1-4 in. long. Low grounds. Blooming from spring to fall. Fla. to N. J. and Texas.

Pluchea purpurascens. Heads similar to above species. Plants 1-5 ft. tall. Leaves short-stalked. Fla. to Ga. and Texas.

Pterocaulon undulatum (Chaenolobus). Rabbit-tobacco. Blackroot. Heads whitish, tiny, crowded in thick spikes 1-4 in. long. Pappus hairlike bristles. Stems 1-2 ft. tall, winged. Leaves oblong or narrow, 2-5 in. long, green above, white-woolly beneath. Pinelands. Blooming all the year. Fla. to N. C. and Miss.

Melanthera—several species. Heads whitish, stalked, about $\frac{1}{2}$ in. across. Anthers black. Pappus 2 or more fragile awns. Stems 1-6 ft. tall, branched, rough. Leaves rough, usually broadest at base, often 3-lobed, 1-6 in. long. Sandy soil. Fla.

Helianthus Radula. Rayless sunflower. Heads purplish brown, 1 in. or less across, solitary, terminating nearly leafless stem 1-3 ft. tall. Pappus 2 fragile awns. Basal leaves broad, hairy, 2-5 in. long. Low pinelands. Blooming in summer and fall. Fla. to Ga. and Ala.

Polypteris integrifolia. Heads white, pink, or purplish, stalked, in terminal inflorescence. Involucre bracts broad, white or white-margined. Pappus 8-12 narrow scales. Plants 1-4 ft. tall. Leaves alternate, narrow, 1-3 in. long. Dry soil. Blooming from spring to fall. Fla. and Ga.

Palafoxia Feayi. Flowers whitish or pale purple, spreading. Heads in loose terminal clusters. Involucre bracts narrow, green. Pappus 8-12 short scales. Plants shrubby, 2-10 ft. tall. Leaves oblong or broadest near base, 1-3 in. long. Sandy soil. Blooming in fall and winter. Fla. peninsula.

Erechtites hieracifolia. Fireweed. Heads greenish, cylindrical, in terminal inflorescence. Pappus silky hairs. Plants 1-6 ft. tall. Leaves thin, 2-8 in. long, toothed. Waste places and damp soil. Blooming all the year. Fla. to La. and northward.

Mesadenia floridana. Indian plantain. Indian collard. Heads whitish, cylindrical, in wide terminal inflorescence. Involucre bracts 5, winged. Pappus soft bristles. Stems grooved, 2-4 ft. tall. Leaves smooth, thick, strongly nerved, oval or broadest near base, 2-7 in. long, toothed. Pinelands. Blooming from spring to fall. Fla.

Mesadenia lanceolata. Heads similar to above species, few. Stems not grooved. Leaves narrow, 3-nerved, entire or toothed, 4-15 in. long, slightly glaucous. Low pinelands. Fla. to Ga. and La.

Emilia sonchifolia. Tassel-flower. Paint brush. Heads red or reddish orange, in stalked terminal clusters. Pappus hairlike bristles. Plants 1-3 ft. tall, somewhat hairy. Leaves oblong, toothed, 2-6 in. long, clasping stem. Roadsides and waste places. Blooming all the year. Southern Florida.

Carduus spinosissimus. Thistle. Flowers purple or yellow, heads 2-3 in. across, surrounded by spiny bracts. Pappus hairlike bristles. Plants 1-5 ft. tall. Leaves spiny, deeply cut and toothed, 3-15 in. long. Sandy soil. Blooming chiefly from spring to fall. Fla. to Me. and Texas.

Carduus Nuttallii. Thistle. Heads pale purple, nearly 1 in. across, many. Plants 3-15 ft. tall. Stems winged. Dry soil. Blooming in spring and summer. Fla. to S. C. and Miss.

GROUP II

HEADS WITH RAY-FLOWERS

Rays very small in *Solidago*, *Euthamia*, and *Flaveria* PAGE

SHRUB. Rays yellow *Borrichia* 237

HERBACEOUS PLANTS

LEAVES CHIEFLY BASAL

Rays white or pink, heads solitary *Chaptalia* 238

Rays white or purple, heads not solitary..... *Erigeron* 236

Rays yellow, lvs. deeply lobed *Berlandiera* 236

Rays yellow, lvs. entire or toothed..... *Helenium* 238

LEAVES OPPOSITE

Rays yellow, lvs. lobed..... *Polymnia* 236

Rays yellow, tiny, lvs. entire *Flaveria* 238

Rays yellow, showy, lvs. entire or divided... *Coreopsis* 237

Rays yellow, or white, lvs. divided and toothed.. *Bidens* 237

LEAVES ALTERNATE

RAYS WHITE, PURPLE, OR PINK

PAGE

Rays few, white, lvs. short, erect	<i>Sericocarpus</i>	235
Rays few, white, lvs. 1-3 in. long, entire..	<i>Doellingeria</i>	236
Rays few, white, lvs. large, lobed	<i>Verbesina</i>	237
Rays many, pappus of bristles	<i>Aster</i>	235
Rays many, pappus of scales and 2-4 bristles.	<i>Boltonia</i>	235

RAYS YELLOW

Heads large, lvs. narrow, smooth	<i>Actinospermum</i>	237
Heads large, lvs. narrow, rough	<i>Helianthella</i>	237
Heads large, lvs. oblong, entire	<i>Gaillardia</i>	238
Heads large, lvs. oblong, slightly toothed....	<i>Rudbeckia</i>	236
Heads large, lvs. broad, toothed	<i>Helianthus</i>	237
Heads medium, lvs. smooth, entire	<i>Helenium</i>	238
Heads medium, lvs. rough, odorous, toothed.....	<i>Heterotheca</i>	234
Heads medium, lvs. silky, woolly, or rough.....	<i>Chrysopsis</i>	234
Heads medium, lvs. deeply lobed	<i>Senecio</i>	238
Heads small, lvs. thread-like	<i>Euthamia</i>	235
Heads small, lvs. not thread-like	<i>Solidago</i>	235

Heterotheca subaxillaris. Golden aster. Heads yellow, about $\frac{1}{2}$ in. across. Plants 1-3 ft. tall, much branched. Leaves oblong, toothed, 1-3 in. long. Ray achenes lack hairy pappus, genus otherwise resembles *Chrysopsis*. Sandy soil. Blooming chiefly spring to fall. Fla. to Del., Texas, and Kan.

Chrysopsis graminifolia. Golden aster. Heads yellow, about 1 in. across, in terminal inflorescence. Stems 1-4 ft. tall. Leaves narrow, long, entire, silvery with silky hairs. Pappus hairlike bristles with outer ring of microscopic bristles. Sandy soil. Blooming in summer and fall. Fla. to Md. and Texas.

Chrysopsis microcephala. Heads small, many. Stems clustered, 1-2 ft. tall. Leaves silvery, narrow, entire, 1-10 in. long. Sandy soil. Blooming spring to fall. Fla. to S. C. and Texas.

Chrysopsis scabrella. Heads about $\frac{3}{4}$ in. across, many, slightly fragrant. Plants 1-3 ft. tall. Leaves rough, entire, 1-3 in. long. Dry soil. Blooming in fall. Fla.



FIG. 34. *Berlandiera*
Berlandiera subacaulis

Chrysopsis latisquama. Similar to above species, but leaves are woolly and toothed. Damp pinelands. Blooming in spring and summer. Fla.

Chrysopsis mariana. Heads 1 in. across. Plants 1-2 ft. tall, hairy. Leaves oblong or elliptic, 1-4 in. long. Sandy soil. Blooming in summer and fall. Fla. to N. Y. and La.

Euthamia caroliniana. Heads yellow, tiny, many, in terminal clusters. Pappus of bristles. Plants 1-3 ft. tall, woody at base, branched. Leaves many, very narrow, 1-3 in. long. Sandy soil. Blooming chiefly in fall. Fla. to Mass., Texas, and Ill.

Solidago Chapmanii. Goldenrod. Heads yellow, small, many, in terminal 1-sided panicle. Rays tiny. Pappus of bristles. Stems 2-5 ft. tall, pubescent. Leaves oblong, sessile, 1-3 in. long. Pinelands. Blooming in summer and fall. Fla.

Solidago angustifolia. Heads similar to above species. Stems smooth, 3-7 ft. tall. Leaves narrow, 6-16 in. long. Low grounds. Fla. to N. C. and Texas.

Boltonia diffusa. Heads small, aster-like, terminating slender branches. Disk yellow, rays white or purplish. Pappus short scales and 2-4 bristles. Plants slender, 2-6 ft. tall. Leaves narrow, entire, 1-4 in. long, very short on branches. Damp soil. Blooming in fall and winter. Fla. to S. C., Texas, and Ill.

Sericocarpus bifolius. White-topped aster. Heads small, in terminal clusters. Rays white, few, disk often yellow. Pappus of bristles. Plants 1-2 ft. tall, minutely hairy. Leaves erect, entire, broadened upward, sessile, 1 in. long or less. Pinelands. Blooming from spring to fall. Fla. to Va. and La.

Aster carolinianus. Climbing aster. Heads 1 in. or more across, at ends of branches. Rays light purple or pink, disk yellowish. Pappus of bristles. Stems long, usually reclining on shrubs. Leaves elliptic or oblong, entire, 1-4 in. long, base clasping stem. Swamps. Blooming in fall and winter. Fla. to S. C.

Aster concolor. Heads purple, small, in raceme resembling *Liatris*. Stems 12-30 in. tall. Leaves oblong or narrow, silky, 1-2 in. long. Dry soil. Blooming in fall. Fla. to Mass. and La.

Aster adnatus. Heads violet, about $\frac{3}{4}$ in. across, terminating branchlets. Plants 1-3 ft. tall. Leaves oblong, rough, less than $\frac{1}{2}$ in. long, adnate to stem except at tips. Pinelands. Blooming in fall. Fla. to Ga. and Ala.

Aster squarrosus. Heads similar to above species. Plants 1-2 ft. tall. Leaves many, tiny, rough, reflexed. Dry soil. Fla. to N. C.

Erigeron vernus. Fleabane. Rays white or pale purple. Heads small, aster-like, in flat-topped inflorescence terminating slender stem 6-24 in. tall. Pappus of bristles. Leaves chiefly basal, smooth, elliptic, 2-4 in. long. Damp soil. Blooming in winter and spring. Fla. to Va. and La.

Doellingeria reticulata. White aster. Rays white, few, disk yellowish. Heads 1 in. or more across, stalked, in terminal inflorescence. Pappus of bristles. Plants 1-4 ft. tall. Leaves oblong or oval, 1-3 in. long, pale beneath and strongly veined. Low pinelands. Blooming in spring and summer. Fla. to S. C.

Polymnia uvedalia. Leaf-cup. Heads yellow, 1 in. or more across, outer involucre bracts leaf-like. Pappus none. Plants 3-8 ft. tall. Leaves chiefly opposite, large, 3-5-lobed, leafstalks winged. Damp soil. Blooming in summer and fall. Fla. to N. Y., Texas, and Mo.

Berlandiera subacaulis. Florida dandelion. Heads yellow, 1 in. or more across, long-stalked. Rays 8-12. Pappus none. Tufted plants 6-18 in. tall. Leaves oblong, deeply lobed, 2-6 in. long. Sandy soil. Blooming chiefly in spring and summer. Fla.

Rudbeckia floridana. Cone-flower. Heads 1-2 in. across, rays yellow, disk brown. Pappus none. Plants 1-2 ft. tall. Leaves oblong, rough-hairy, slightly toothed, 1-3 in. long. Sandy soil. Blooming from spring to fall. Fla. to Texas and Ark.

Borrichia frutescens. Sea ox-eye. Heads yellow, about 1 in. across, terminating branches. Pappus a short crown. Shrub 1-3 ft. tall. Leaves narrow or broadened upward, 1-3 in. long, grayish with short hairs, thickish. Near the coast. Blooming from spring to fall. Fla. to Va. and Texas.

Helianthus debilis. Dwarf sunflower. Beach sunflower. Heads about 2 in. across, long-stalked. Rays yellow, disk purplish brown. Pappus 2 fragile awns. Plants spreading in thick mats, rough-hairy. Leaves broad at base, toothed, stalked, 2-3 in. long. Sand near the coast. Blooming all the year. Fla. to Texas.

Helianthella grandiflora. Heads yellow, 3-4 in. across, few. Pappus 2 chaffy teeth. Stems 2-4 ft. tall. Leaves narrow, rather rigid, rough, 1-2 in. long. Pinelands. Blooming in summer and fall. Fla.

Verbesina virginica. Crownbeard. Heads small, in terminal clusters, rays white, few. Pappus 2 awns. Stems winged, 3-6 ft. tall. Leaves oval or broadest near base, 2-8 in. long, toothed, leaf-stalks winged. Dry soil. Blooming in summer and fall. Fla. to Pa., Texas, and Mo.

Coreopsis Leavenworthii. Heads 1 in. across, terminating branches. Rays yellow, disk purplish brown. Pappus 2 slender awns. Plants slender, 2-4 ft. tall. Leaves very narrow, lower often of 3 narrow divisions 3-4 in. long. Low grounds and near the coast. Blooming all the year. Fla.

Bidens leucantha. Spanish-needles. Heads about 1 in. across. Rays few, broad, white, disk yellow. Pappus 2-4 barbed awns. Plants 1-5 ft. tall, branched. Leaves divided and toothed, divisions 1-3 in. long. Waste places. Blooming all the year. Fla.

Bidens coronata. Bur-marigold. Heads yellow, 1-2 in. across. Pappus 2 short teeth. Plants 1-4 ft. tall, branched. Leaves usually divided, 2-7 in. long, toothed. Wet places. Blooming all the year. Fla. to Ala. and Va.

Actinospermum angustifolium. Heads yellow, 1-2 in. across, terminating branches, becoming hard and honey-combed in ripening. Pappus of about 12 tiny roundish scales. Plants 1-2 ft. tall, widely branched. Leaves narrow, about 1 in. long. Sandy soil. Blooming in summer and fall. Fla. and Ga.

Flaveria linearis. Heads yellow, very small, in compact flat-topped inflorescence. Ray 1, tiny. Pappus none. Plants 10-30 in. tall. Leaves narrow, entire, 1-4 in. long. Chiefly near the coast. Blooming in summer and fall. Fla.

Helenium tenuifolium. Sneezewood. Bitterweed. Heads yellow, about 1 in. across, terminating branches. Pappus 5-8 awn-tipped scales. Plants 6-18 in. tall, branched. Leaves many, narrow, 1-2 in. long, very bitter. Waste places and damp soil. Blooming in summer and fall. Fla. to Va., Texas, and Mo.

Helenium vernale. Heads yellow, 1 in. or more across, solitary, terminating nearly leafless stem 1-2 ft. tall. Basal leaves oblong or broadened upward, usually toothed, 2-6 in. long. Low grounds. Blooming in winter and spring. Fla. to N. C.

Gaillardia lanceolata. Heads about 2 in. across, terminating branches. Rays yellow, often reddish beneath, disk reddish purple. Pappus 6-12 awn-tipped scales. Plants 1-2 ft. tall. Leaves oblong or narrow, 1-3 in. long. Pinelands and prairies. Blooming from spring to fall. Fla. to S. C. and Texas.

Senecio lobatus. Ragwort. Heads yellow, less than 1 in. across, many, in terminal inflorescence. Pappus of bristles. Stems hollow, ribbed, 1-3 ft. tall. Leaves oblong, deeply lobed, 2-10 in. long. Low grounds. Blooming from spring to fall. Fla. to N. C., Texas, and Ill.

Chaptalia tomentosa (Thyrsanthema semiflosculare). Pineland daisy. Heads 1 in. across or less, solitary, on flower-stem 4-15 in. tall. Rays white, tinged with pink or purple outside, disk flowers whitish, 2-lipped. Pappus, hairlike bristles. Leaves basal, oblong, usually entire, 2-4 in. long, dark green and shining above, densely white-woolly beneath. Low pinelands. Blooming in winter and spring. Fla. to N. C. and Texas.

GROUP III

ALL FLOWERS STRAP-SHAPED. SAP MILKY		PAGE
Heads light purple or pink, large.....	Lygodesmia	239
Heads pale purple, small	Lactuca	239
Heads yellow, large	Sitilias	239
Heads yellow, small, leaves hairy	Hieracium	239
Heads orange yellow, small	Adopogon	239



FIG. 35. Rushweed
Lygodesmia aphylla

Hieracium argyraeum. Hawkweed. Heads yellow, small, in terminal panicle. Pappus hairlike bristles. Stem 1-2 ft. tall. Leaves chiefly basal, very hairy, oblong or broadened upward, 1-4 in. long. Pinelands. Blooming in spring. Fla. peninsula.

Lygodesmia aphylla. Rushweed. Heads light purple or pinkish, nearly 2 in. across, few. Pappus hairlike bristles. Stems rush-like, 1-3 ft. tall. Basal leaves few, narrow, long, stem leaves lacking or bract-like. Pinelands. Blooming all the year. Fla. and Ga.

Sitilias caroliniana. False dandelion. Heads light yellow, 1 in. or more across, long-stalked. Pappus hairlike bristles. Stems 1-3 ft. tall. Leaves oblong or narrow, deeply lobed or toothed, 2-8 in. long. Dry soil. Blooming in spring and summer. Fla. to Del., Texas, and Mo.

Lactuca graminifolia. Wild lettuce. Heads pale purple, bluish, or white, small, in terminal panicle. Pappus hairlike bristles. Plants 2-5 ft. tall. Leaves narrow, sharply lobed or entire, 4-15 in. long. Dry soil. Blooming from spring to fall. Fla. to S. C. and Texas.

Adopogon carolinianus. Dwarf dandelion. Heads yellow or orange, small, solitary, on flower-stem 2-12 in. tall. Pappus hairlike bristles. Leaves basal, lobed or toothed, oblong or narrow, 1-5 in. long. Dry soil. Blooming in winter and spring. Fla. to Me., Texas, and Minn.

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